ENGINEERING NEWS-RECORD

MARCH 8, 1956

PRICE 35 CENTS

▶ Three strike [illegible] water-pollution p. 32

▶ [illegible] trick p. 47

Tilt-up steel ribs speed dome erection p. 45

A McGRAW-HILL PUBLICATION

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UNIVERSITY MICROFILMS IN
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City of Charlotte Sugar Creek Combined Sewage and Industrial Wastes Treatment Plant

City of Charlotte pipes for permanence with WROUGHT IRON

Adding to the sewage facilities without adding to maintenance costs was a prime consideration in the selection of wrought iron pipe for this $3,500,000 Charlotte, North Carolina, sewage treatment plant addition. Approximately 20 tons were used for water lines, $2\frac{1}{2}$" and smaller, and all hot water lines in the plant.

J. N. Pease & Company, Charlotte, North Carolina, were architects and engineers for the project. V. M. Higgins Company, Greensboro, North Carolina, were the contractors.

Wrought iron pipe's ability to resist corrosion makes it the ideal choice for a variety of sewage services. An increasing number of designers, recognizing this long-life advantage, are putting wrought iron pipe to work to safeguard against costly repairs and replacement. The city of Charlotte, for example, uses $\frac{3}{4}$" through $2\frac{1}{2}$" galvanized wrought iron pipe in all water service and some trunk lines.

Our bulletin, *Wrought Iron for Sewage Treatment and Disposal Installations*, gives the complete story of wrought iron protection, and illustrates many services in which it is serving longer, at lower cost per year. Write for your copy.

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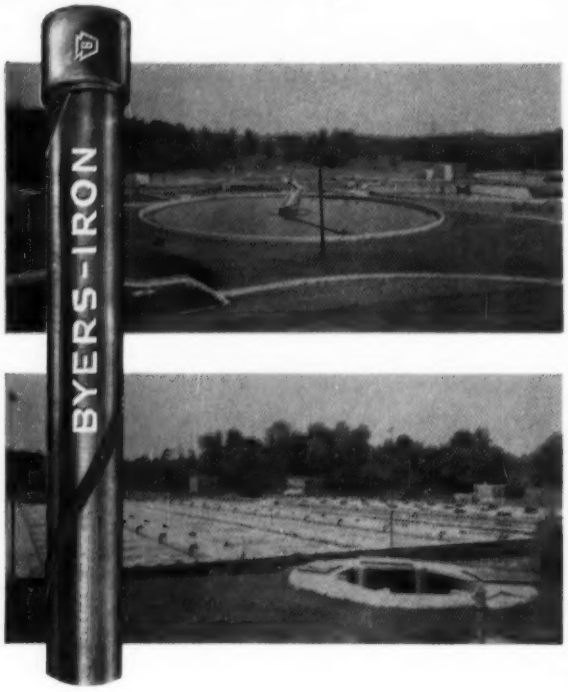


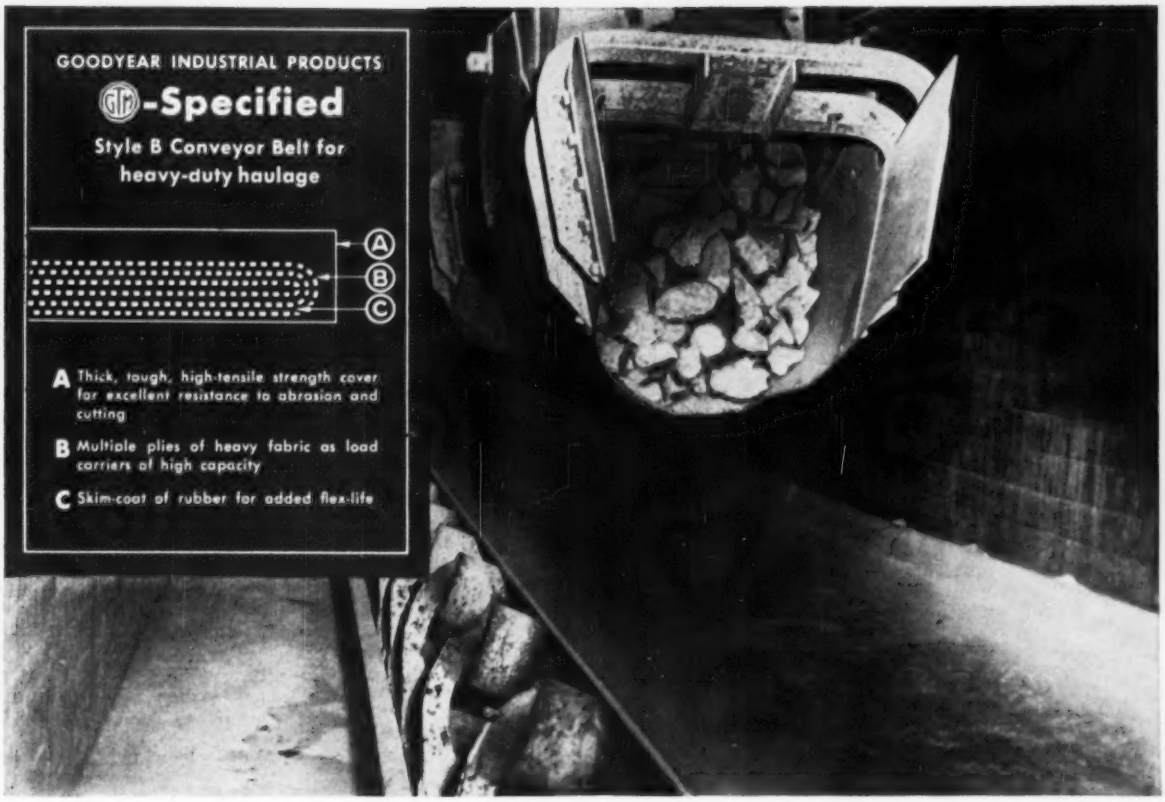
BYERS

CORROSION COSTS YOU MORE THAN WROUGHT IRON

WROUGHT IRON

TUBULAR AND HOT ROLLED PRODUCTS

ELECTRIC FURNACE QUALITY STEEL PRODUCTS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GY-Specified
Style B Conveyor Belt for heavy-duty haulage
A
B
C
A Thick, tough, high-tensile strength cover for excellent resistance to abrasion and cutting
B Multiple plies of heavy fabric as load carriers of high capacity
C Skim-coat of rubber for added flex-life

22 Years' Service

hauling over 10,000,000 tons of limestone

IN 1930, a Midwestern lime and stone company planned to install a conveyor belt to handle limestone. Of major concern was the beating the belt would take from the sharp, rough stone plus its running in a dark, damp tunnel—a perfect environment for mildew.

To assure the right belt for the job, the G.T.M.—Goodyear Technical Man—was called in. He recommended a rugged, 48"-wide, cotton duck belt, similar to today's Style B (see blueprint) and fully protected with Goodyear Mildew Inhibitor.

RESULT: The belt finally was retired after 22 years' continuous service during which it hauled 10,593,965 long tons. Subsequent tests showed its fabric strength to be excellent, while ply adhesion and cover tensile were only slightly below those required on a new belt.

Details on longer service at lower cost from any conveyor belt are available from the G.T.M., your Goodyear Distributor or Goodyear, Industrial Products Division, Akron 16, Ohio.

* * *

YOUR GOODYEAR DISTRIBUTOR *can quickly supply you with Hose, Flat Belts, V-Belts, Packing or Rolls. Look for him in the yellow pages of your Telephone Directory under "Rubber Products" or "Rubber Goods."*

CONVEYOR BELTS by

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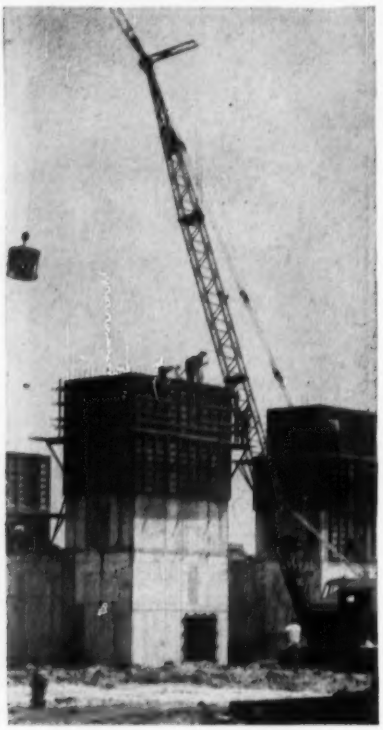
Symons FIELD REPORT...



SYMONS FORMS USED ON TWA TEST CELLS ...

Five aircraft engine test cells, with exhaust and intake stacks 45 feet high, are being erected at Trans World Airlines' overhaul base at Mid-Continent International Airport, Kansas City, Mo.—the first cells of their kind in the United States.

These cells are on a concrete base, and 12,500 square feet of Symons Forms with Steel Cross Members were used for the 55,000 square feet of concrete forming required. Sharp Brothers Contracting Company, Kansas City was the general contractor.

TWA test cells are just one of many commercial, industrial, institutional and public works construction jobs for which Symons Forms are adaptable. Symons engineering staff gives complete service on the details of all forming jobs. Our salesmen are field-trained to give practical advice on form erection, pouring and stripping methods.

Symons Forms, Shores and Column Clamps may be rented with purchase option, all rentals to apply on purchase price. Symons Clamp & Mfg. Co., 4265 Diversey Ave., Dept. C6, Chicago 39, Ill.

In this unusual stripping procedure, panels are being removed by a worker seated in a bosun's chair suspended from a crane boom.

For More Information on FORMS—CLAMPS—SHORES Write for Literature

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EIGHTY-SECOND YEAR OF PUBLICATION

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Publisher

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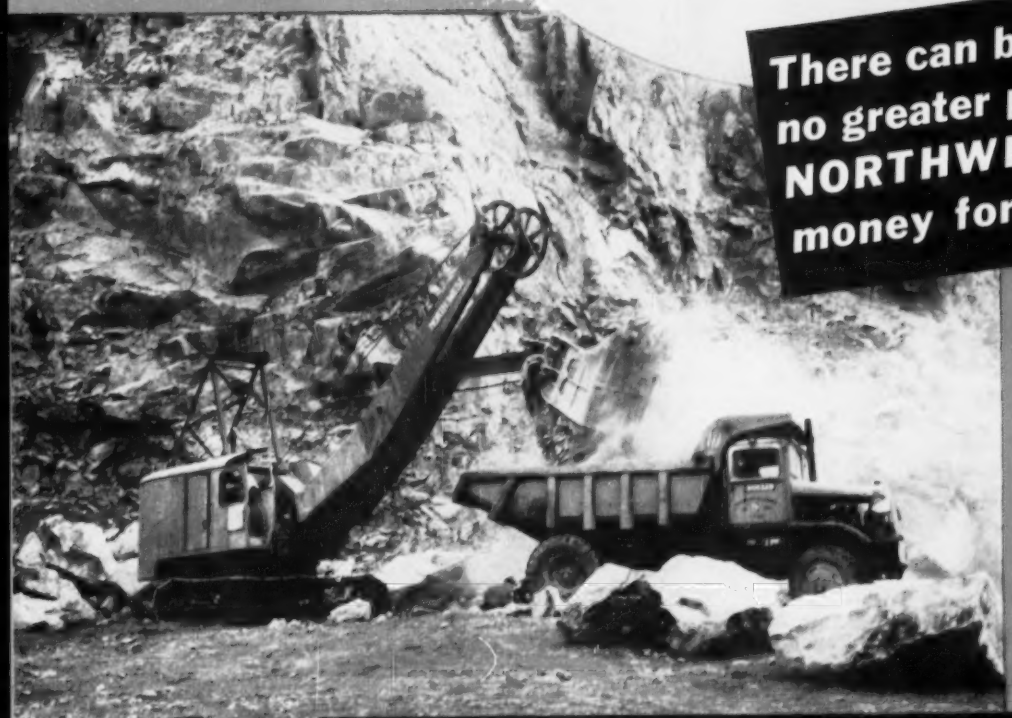

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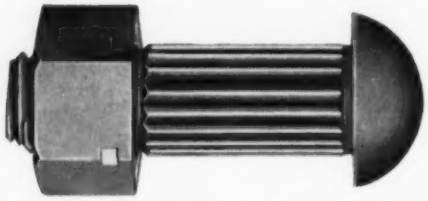
STRUCTURAL RIBBOLTS® and ANCO NUTS for Speed -- Strength and Savings in..

MICROWAVE LINK BETWEEN TORONTO AND WINDSOR, ONTARIO

SPEED was the keynote in the erection of this 240 foot high tower by the Canadian Bridge Co., Ltd., of Walkerville, Ontario for the Standard Telephones and Cables, Ltd., of London, England. This is one of the many towers linking Toronto and Windsor. The towers went up *quickly* and went up *right*—fastened securely with Galvanized Anco Lock Nuts and Galvanized "Structural Rib Bolts". Here again Anco proved it takes less time to get the *most efficient field construction.*

STRENGTH is built into every inch of this tower, located between Windsor and Toronto near Preston, Ontario. The tower is 240 feet high, 14 feet wide on face and has a 40 foot base spread. The design calls for the support of 8 ten foot diameter parabolic microwave antenna dishes and is made up of 76 tons of galvanized steel. Strength is a "must" in tower construction of this type—and the "most" strength was attained by using galvanized "Structural Rib Bolts" and Anco Lock Nuts.

SAVINGS in time, money and man hours were again assured in this field bolted tower.



SURE THERE'S SPEED, STRENGTH and SAVINGS

TWO MEN with a maul and wrench places the ANCO pair—to take the place of a riveting team. Tests prove the ⅝" diameter bolt to be *stronger* than the ¾" rivet. And this combination of speed and strength saves both time and money on all types of tower construction—that's why more and more towers are being built this way!

GALVANIZED Anco Structural Rib Bolts are used in the erection of all types of towers—Radar—Television—Radio—Hi-Tension, etc.

GALVANIZED "ANCO" lock nuts are used on millions of clamps for Transmission Lines.

Send for information and samples.

AUTOMATIC NUT COMPANY, INC.

LEBANON - - - PENNSYLVANIA

Trouble and breakdowns can't hide

IN THIS SEVEN FOOT CONCRETE UTILITY TUNNEL

Lewis Flight Propulsion Laboratory of the National Advisory Committee for Aeronautics
Cleveland, Ohio

Contractor
Lombardo Bros. Construction Co.

These racks will carry power lines and utility cables to a supersonic wind tunnel of the Lewis Flight Propulsion Laboratory. Repairing line breaks, which could shut down an extremely important research project, will be an easy job. A man will walk right up to the trouble zone and go to work.

American Vitrified Products Company supplied several thousand feet of special order 78-inch concrete pipe for this project. Galvanized inserts were welded to the reinforcing steel in the pipe. Supporting brackets holding the cable racks are then bolted to the inserts.

American Vitrified Products Company is often called on for these complicated jobs. Our years of experience and technical know-how guarantee customer satisfaction.

Concrete pipe is just one of the many products we manufacture. We also produce the new Amvit Jointed Clay Pipe, flue liners—both glazed and unglazed, and clay liner plates.

For more information, write or call American Vitrified Products Company, National City Bank Building, Cleveland, Ohio, or our office nearest you.

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strong

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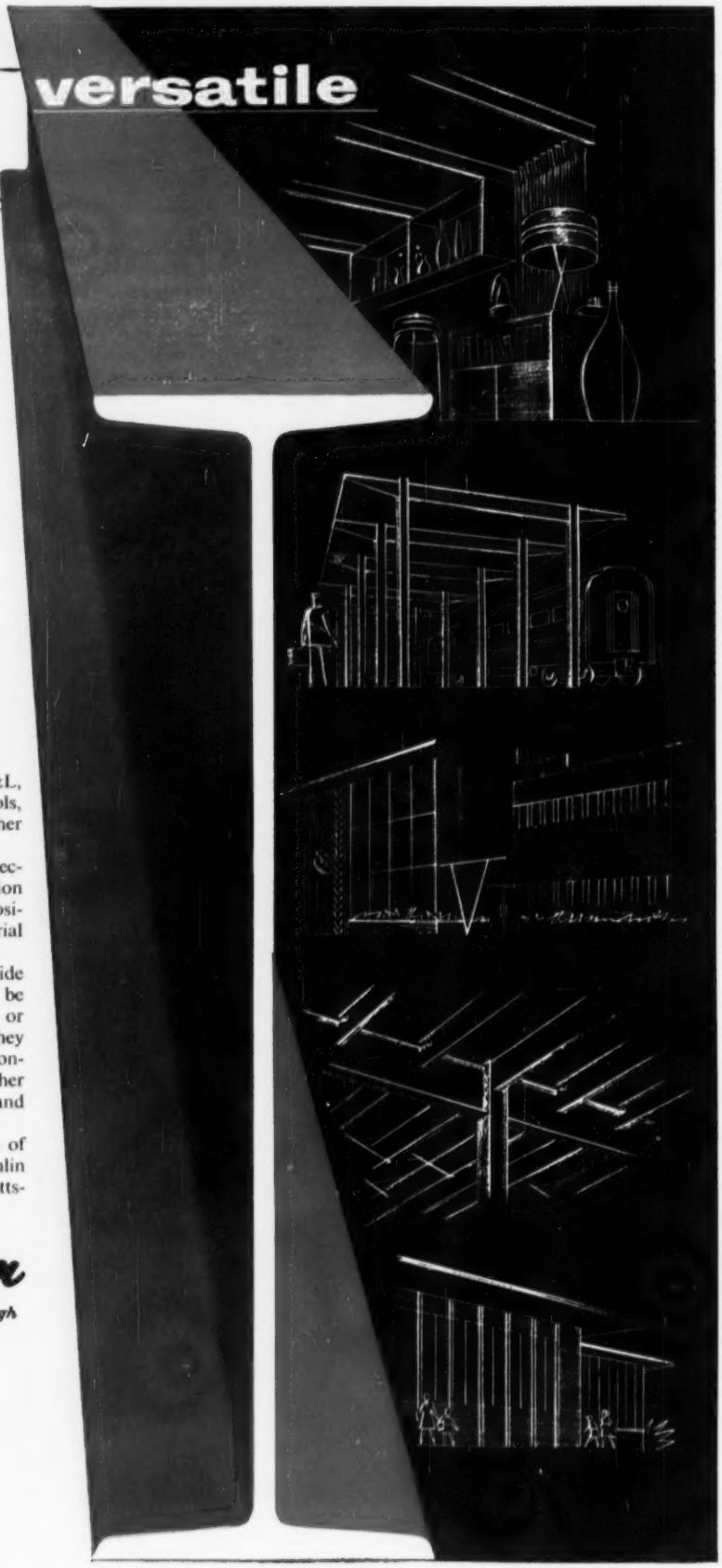
Lightweight

J&L JUNIOR BEAMS



Junior Beams, produced exclusively by J&L, can help you cut building costs in schools, apartment buildings, warehouses and other light occupancy structures.

The lightest hot rolled structural steel section available, Junior Beams speed erection because they can be easily raised and positioned with minimum manpower and material handling equipment.

Junior Beams may be adapted to a wide range of architectural design. They can be framed-in, used as a continuous member, or cantilevered beyond supporting walls. They are not only suitable for floor and roof construction but can be used for numerous other applications such as shipbuilding, truck and trailer frames and grandstands.

For complete information on the uses of J&L Junior Beams, write Jones & Laughlin Steel Corporation, 428 Gateway Center, Pittsburgh 30, Pa.

Jones & Laughlin

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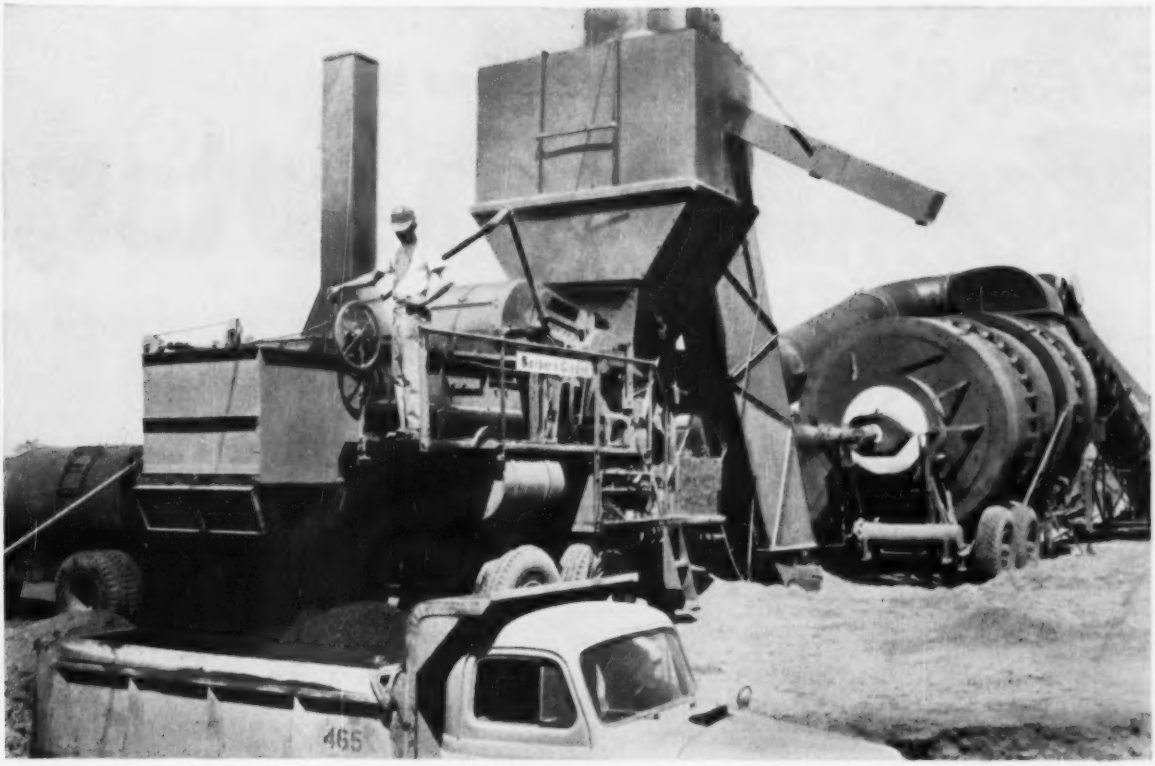
J&L STEEL



48 hours after this picture was taken, this asphalt plant was operating 70 miles away

In its first season of operation, this Barber-Greene Model 848 continuous plant was moved to six different job sites . . . produced 111,315 tons of quality hot mix in 555 hours of operation for an average of 200 tons per hour.

All plant components are mounted on rubber-tired chassis for over-the-road towing at truck speeds.

Gradation Control Unit Added

Typical of the many Barber-Greene plant owners, this Minnesota contractor operated with the basic equipment first and later purchased the Gradation Control Unit. He can meet any specification, and has the flexibility of towing the Gradation Unit only to those jobs requiring screening after drying.

Inherently Automatic

Plant operation is based on the Barber-Greene continuous principle which is inherently automatic. Once the controls are set, the plant produces at top efficiency and accuracy.

Barber-Greene manufactures a complete line of continuous and batch asphalt mixing plants with capacity ranges to meet your production requirements.

Same continuous plant with Gradation Control Unit added.

Write for literature on any continuous or batch plant in Barber-Greene's complete line. 56-2-A

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CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

Even at 30° below...

BLUE BRUTE rotary

BLUE BRUTE SIZES: 125′, 210′, 315′ AND 600′

starts every time!

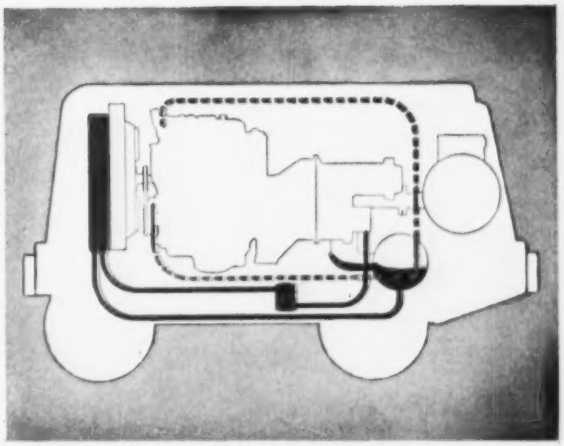
Effective clutch lets you warm up compressor for sure, safe operation

You never have to worry about cold-weather starts with the Blue Brute rotary compressor.

The Blue Brute's heavy-duty, disc-type clutch lets you warm up the engine *without* engaging the compressor. *And you preheat the compressor oil at the same time.*

Warm water from the engine water jacket circulates through heating coils in the compressor oil reservoir to preheat the compressor oil. Engine water is automatically shut off when the compressor is placed in operation.

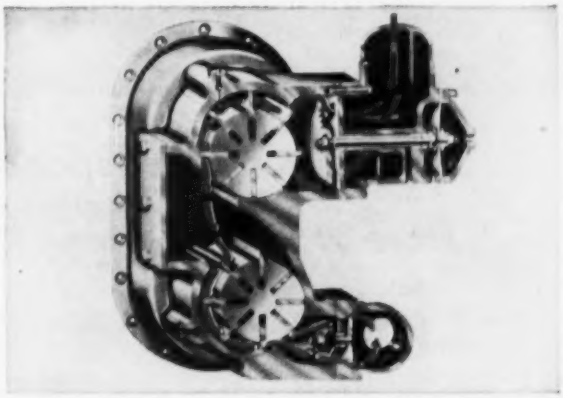
The Blue Brute's clutch also acts as a "safety coupling" between the engine and compressor. What's more, it automatically compensates for any minor misalignment if it occurs. This rugged, balanced, hydraulically-operated clutch is *one* big reason for the Blue Brute rotary's fine performance.



HOT WATER (*broken blue line*) from engine jacket passes through coils in oil reservoir to preheat oil (*solid blue line*) before clutch is engaged.

Full drainage protects blades

Another key Blue Brute feature is the unique self-draining compressor design. Double-deck arrangement of first- and second-stage cylinders, together with the location of their suction and discharge, allows full gravity draining of all oil from cylinders and interstage chamber. So it's impossible for oil to accumulate in cylinders after shutdown and damage rotor blades on starts. No deposits or gummy residues can settle out of oil on working parts to impair performance.



DOUBLE-DECKED CYLINDER ARRANGEMENT allows gravity oil drainage during shutdown. Arrows show air and oil flow.

Complete Blue Brute line available

Get all the facts about the Blue Brute rotary compressor from your Blue Brute Distributor. Better yet—ask him to arrange a demonstration for you. There's a Blue Brute for every need—125′, 210′, 315′ and 600′ sizes on all standard mountings. You'll see why we say the Blue Brute rotary is the most flexible portable compressor on the market.

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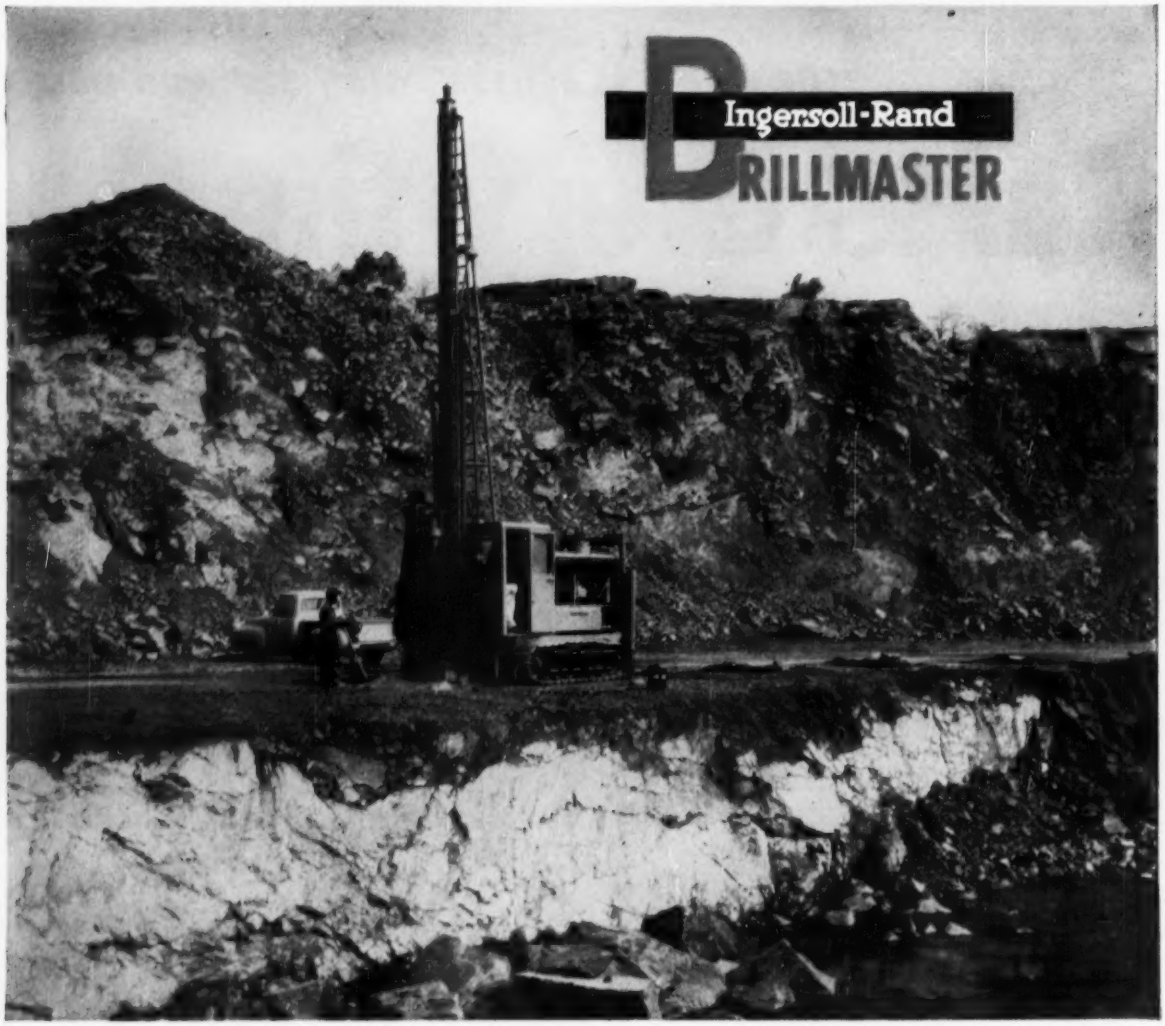

increases drilling speed

from 30 feet to 200 ft per 9½ hr shift

Here at a large eastern limestone quarry, the Ingersoll-Rand Drillmaster shown above is sinking 6" blast holes to a depth of 42 feet, at a rate of 200 ft. per 9½-hour shift. Previously, with other drilling equipment, footage averaged only 30 ft. per shift. The Drillmaster Carset Jackbits are giving 5,000 to 10,000 feet per bit, with 500 feet between sharpenings.

The unique "down the hole" Depth-Master drill, an exclusive Drillmaster feature, goes right down the hole with the bit—avoids power losses in long drill steels and applies the full drilling impact directly to the bit at any depth of hole. The three-way Drillmaster can also be used as a Rotary drill or with the Power-Master "out of the hole" drill when desired.

Ask your I-R representative for the complete Drillmaster story—or send for new Bulletin 4179.

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Reader Comment

Are Technicians a Threat?

SIR—The suggestions of the Engineers Joint Council as stated in your article "EJC Says: Turn to Technicians" (ENR. Feb. 2, p. 23) will no doubt bring some immediate relief to the engineering shortage, although it is questionable whether the end justifies the means.

Even with the shortage of qualified engineers, the engineer is finding the road tough in gaining professional recognition. If industry accepts the technician as EJC visualizes, a means of relieving engineers for more important professional work, all will be well. However, should industry, through false economy, try to accomplish its work with men who have two years education plus a few years technical experience; men who can become registered professional engineers in some states with from six to eight years experience; men who will work for $200 less per month—what will this do to engineering education in general, and professional recognition in particular?

GROVER C. HAYES
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CHARLES M. DENT, JR.
LEWIS W. CHRISTOFFEL
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Asheville, N. C.

Photos Offer High Accuracy

SIR—Your article on the use of photogrammetry for measuring deformations of structures (ENR Jan. 26, p. 38) was excellent. Few civil engineers recognize that photogrammetry is essentially a method of making space measurements and is in no way limited to mapping.

Just as it has taken decades for civil engineers in the United States to accept photogrammetry as an accurate method of compiling topographic maps, it is expected that its use in other fields such as structural and hydraulic engineering will be slow in acceptance. It is therefore unfortunate that your article contained the phrase ". . . and its accuracy, although limited, is satisfactory for many applications . . ." without some statement of the accuracy obtained and the accuracy possible with the photogrammetric method. No doubt many engineers will accept the mention of "limited accuracy" as a good excuse for not bothering to explore and try the method themselves.

As examples of the accuracy obtainable by photogrammetric methods, the writer refers interested readers to the writings of Max Zeller of the Swiss Federal Institute of Technology. In his "Textbook of Photogrammetry", (H. K. Lewis & Co., London, 1952), Dr. Zeller describes some work done as far back as 1937 in ascertaining the roughness of the interior of high-pressure water pipes. In this case, contours were plotted on the Wild A2 Autograph with a vertical interval of 0.05 mm. Spot heights were recorded to the nearest 0.001 mm (0.00004 in.). The mean height error in the plotting was reported to be ± 0.004 mm. It may therefore be said that with the proper equipment, it is possible to make space measurements to a matter of microns.

The popular misconception that there is some inherent limit to the accuracy and application of photogrammetry is unfortunate.

CHARLES L. MILLER
Asst. Professor of Surveying
Photogrammetry Laboratory
Massachusetts Institute of Technology
Cambridge, Mass.

The Jet Airport Problem

SIR—I noted with interest your article entitled "Jet Airports—The Price Is High" in the January 19, 1956 issue of ENR. While the concept of building jet planes to fit existing airports is, to a large extent, an excellent policy, it is not believed that some of the reasons for adopting this policy stated in the article are entirely correct.

Recently, I have seen several articles in the press stressing the great costs of providing runways, etc., for jet transports, which articles seemed to have been based upon incorrect understanding of the design problems involved. From your article, it would appear that the Airport Operators Council was equally misinformed.

While jet planes will undoubtedly weigh a great deal more than aircraft presently using the airports, their unit load upon the pavements may be less than that of present day planes. This is because of the use of multiple wheel assemblies that spread the weight as mentioned in your article. Such assemblies have been used on military aircraft for many years and their effect upon the load carrying capacity of pavements has been investigated experimentally and the results accepted by the Corps of Engineers. Pavement design curves of the Corps reflect the beneficial results from using multiple wheel assemblies. It is of interest to note that preliminary investigations show that the jet transport Boeing 707 actually requires a thinner pavement than the Boeing Stratocruiser and requires a pavement thickness similar to that for a DC-7.

Two popular misconceptions about airport paving design are that taxiways and aprons are thinner than runways, and that a plane landing produces a big impact load.

The greatest load on a pavement comes from a fully loaded plane standing still or moving slowly, while its engines are running at high speed. Under these conditions, the full static load of the plane is on the pavement plus a certain amount of impact load from vibration. For jets, this impact factor may be negligible because of the lack of vibration in jet planes. While a plane is moving fast, it is always partially airborne and therefore the load on the pavement is less. For this reason, most airports that have been built within the last 15 years have been designed with the aprons, taxiways, and runways of equal thickness. Present military design standards usually permit a reduction of 10% in the thickness of pavement for runways, except for a distance of 1000 feet at each end, in which the pavement must be as thick as for the taxiways.

The touch-down point on a runway is not particularly critical from a pavement thickness point-of-view. At the moment of touch-down, the plane is nearly 100% airborne and therefore the load on the landing gear is small. In a bad landing, considerable weight may be taken by the wheels but it can be but a small fraction of the weight of the plane when stationary. The effect of the impact upon the pavement is minimized by the ability of the subgrade soil to mobilize more shear strength under impact loading than under static loading. This phenomenon was determined

(Continued on page 14)

Engineering News Record welcomes expression of opinion from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance.

Letters should be addressed: Editor, Engineering News-Record, 330 W. 42nd St., New York, 36, N. Y.

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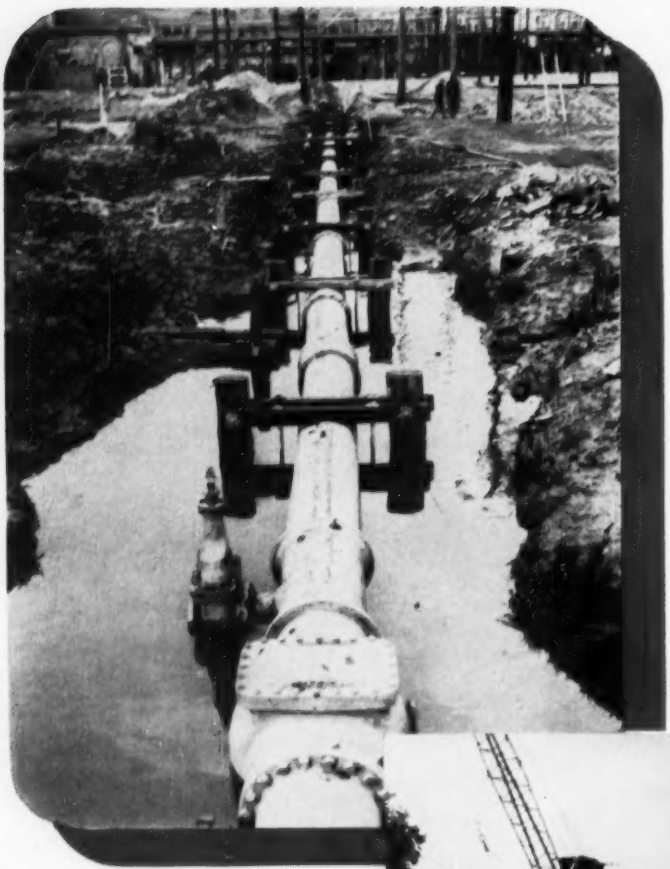

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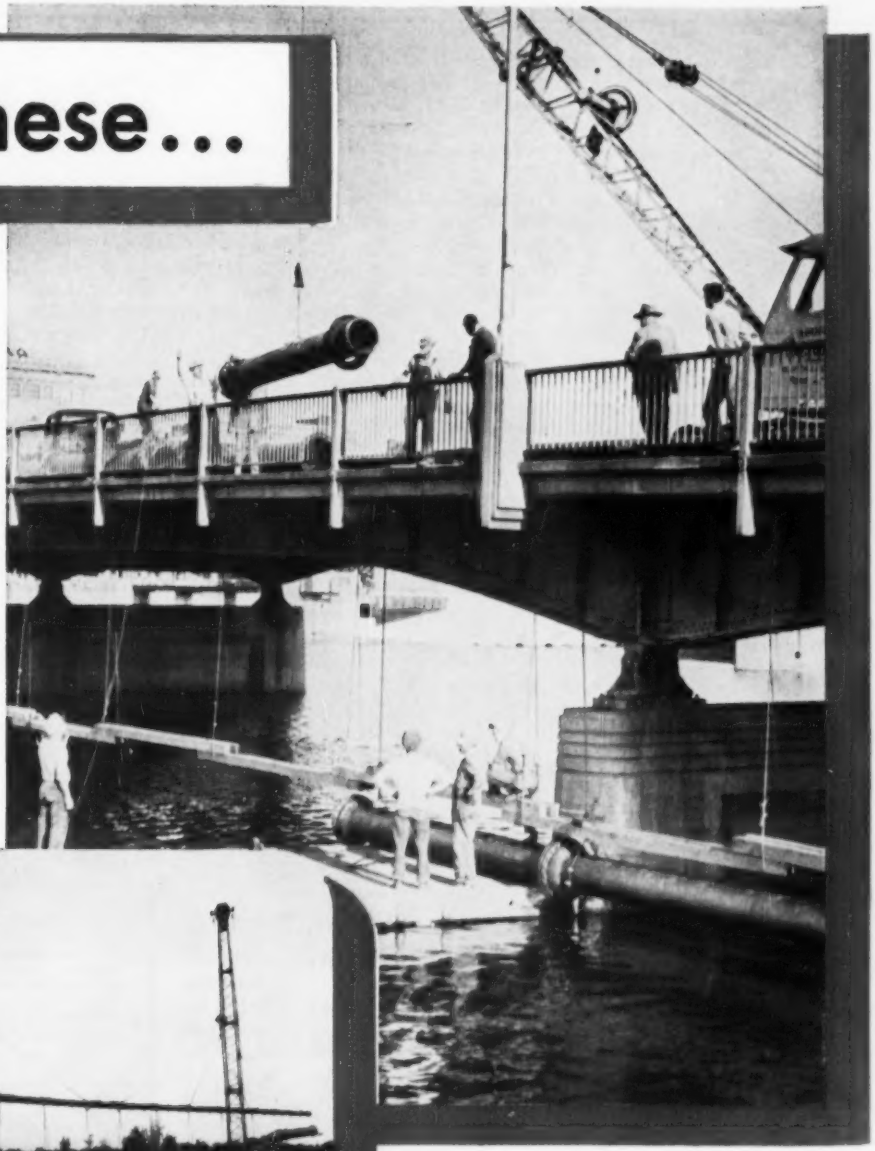

Flexible Joint cast iron pipe being laid across 600 feet-wide river at Waterloo, Iowa, for feeder line operating under 85 psi water pressure.

Installing 24-inch Flexible Joint cast iron pipe for river crossing at Fort Lauderdale, Florida.

SERVES FOR CENTURIES...

from tri-axial shear tests under impact load conducted during studies for the Sea-Level Panama Canal, at Harvard University in 1947-1948.

The problem of accommodating jet transports at existing airports may not be quite as expensive as some people expect, because, if the plane designers can design planes that do not require longer runways, the question of pavements can be resolved by the use of multiple wheel assemblies. However, the arrival of jets on the commercial routes is still going to be costly mainly because of the increased need for more complex traffic control systems that jet operation will make necessary.

While engineers can certainly design pavements and facilities to meet the requirements of any plane designed, it is time that the plane designers recognize the problems and coordinate plane design to airport design. Otherwise, advance in plane design may result in a product for which there is no market. Apart from the physical cost of producing longer runways and thicker pavements, the problems of locating these facilities become acute. Space for lengthy runways is hard to find in urban areas and, in addition, the noise problem at present one of the major headaches for the plane designers, has to be considered. If the airports have to move even further away from the cities, their service to the public decreases.

It is highly desirable therefore that the airplane designers cooperate fully with both the airport operators and the airport designers to bring the "jet age" to the travelling public within reasonable limits of cost

S. S. Cooke-Yarborough
Tippetts-Abbett-McCarthy-Stratton, Engineers
New York, N. Y.

Construction & Foreign Aid

Sir—Referring to the editorial on the above subject (ENR, Jan. 5, 1956, p. 128), it is my opinion that if American engineering firms and consulting Engineers intend to share to a greater extent in the design and supervisory work for large foreign construction and civil engineering contracts financed through direct or indirect U. S. government aid, they should avoid trying to attain their aim through convenient "built in advantages", in the commitments of the financing party.

Such clauses, however carefully concealed, are always detectable. Observed from distant horizons, they always look more like chains than strings, with all the ensuing emotional, political and economic risks offsetting by far the intended benefit for the American economy.

To circumvent the current handicaps of the American firms entering international competition, it is my belief that the first step would be to speed up the processes of acquaintance of their technical staffs with the regulations, methods, and techniques in use and possible in foreign countries.

This could be obtained by closer contacts with members of the staffs of their potential competitors in the industrial countries, preferably through various types of business association, involving financial and technical cooperation and use of equipment.

I have the impression that provided the proper approach is used in the early stages of the contacts between the managing personnel of those organizations, such associations would multiply rapidly, and lead to a widespread acceptance of private international cooperation in this major field of industrial activity.

Such a type of ties, if numerous enough, would prove more stable and in the long run more beneficial than any other type of international commitments.

G. L. Blanchard
Chicago, Ill.

Stress at Inflection Points

Sir—In the article on warehouse failures in ENR Jan. 12, p. 21, one feature of design is mentioned that I believe has not been given sufficient weight. The strenth of concrete beams in diagonal tension may be critical near the point of counterflexture, even though the unit shear is not a maximum at this point. This, I think, can be demonstrated by an example:

Suppose a beam has a total maximum compressive stress of 5,400 lb. With the coefficient of friction of concrete on concrete as 100%, this would add 5,400 lb shearing resistance to the beam, or 257 psi. At the point of counterflexure, where no internal friction is present, the ultimate shearing strength of this beam would be reduced 257 psi.

In the article, some doubt was cast on the effectiveness of the expansion joint. If it did not function properly, tension might be produced over the entire section at the point of counterflexture. The variable depth in the beams has the effect of producing rather high unit shearing stresses at this point. This shear, combined with tension, could explain the failure.

Even with a properly functioning expansion joint, the length of the spans might still produce considerable tension due to the resistance of the columns.

It is almost impossible to make a cantilever beam fail in shear if the compressive and tensile stresses are kept within working limits. On the other hand, a simple beam uniformly loaded has less shearing resistance than a beam restrained at the ends. The concrete code makes no allowance for this condition, but with the tendency to use higher shearing stresses, it could have a decided influence on the strength of a beam.

W. L. Zesiger,
Structural Engineer
Cleveland Electric Illuminating Co.
Cleveland, Ohio

Error in Officers' Names

In reporting new officers of the National Sand and Gravel Association (ENR, Feb. 23, 1956, p. 31) the wrong man was inadvertently listed as heading up the Manufacturers' Division. C. B. Laird, of Eagle Iron Works, Des Moines, Iowa is the new chairman of the Manufacturers' Division, for 1956, and E. D. Stearns, of Barber-Greene Co., Aurora, Ill., was elected a vice chairman of the division.

CALENDAR

American Railway Engineering Association, annual convention, Palmer House, Chicago, March 13-15.

Fifth Inter-American Sanitary Engineering Congress, Lima, Peru, March 19-25.

American Institute of Steel Construction, Eighth National Engineering Conference—plastic design in structural steel, Lehigh University, Bethlehem, Pa., April 4-6.

American Institute of Steel Construction, Eighth Annual National Engineering Conference, Lehigh University, Bethlehem, Pa., April 4-6.

Western Association State Highway Officials Conference, Phoenix, Ariz., April 10, 11, 12, 13.

Purdue Industrial Waste Conference, Purdue Memorial Union, Lafayette, Ind., May 15-17.

American Institute of Architects, annual convention, Biltmore Hotel, Los Angeles, Calif., May 15-18.

Prestressed Concrete Institute, second annual convention, Hollywood Beach Hotel, Hollywood, Fla., May 16-18.

Society for Experimental Stress Analysis, spring meeting, William Penn Hotel, Pittsburgh, Pa., May 16-18.

Building Research Institute, annual meeting, Sheraton-Brock Hotel, Niagara Falls, Ont., May 21-22.

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Again and again, Cities Service receives reports such as this from construction men. If you'd like to know the reasons why, talk with a Cities Service Lubrication Engineer. Or write Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

MORE OF DOFNER'S EQUIPMENT AT WORK. Although he keeps it in almost constant operation, Dofner reports he's never lost a bearing and goes 25% longer between greasings since he switched to Trojan H-2 Multi-Purpose Grease.

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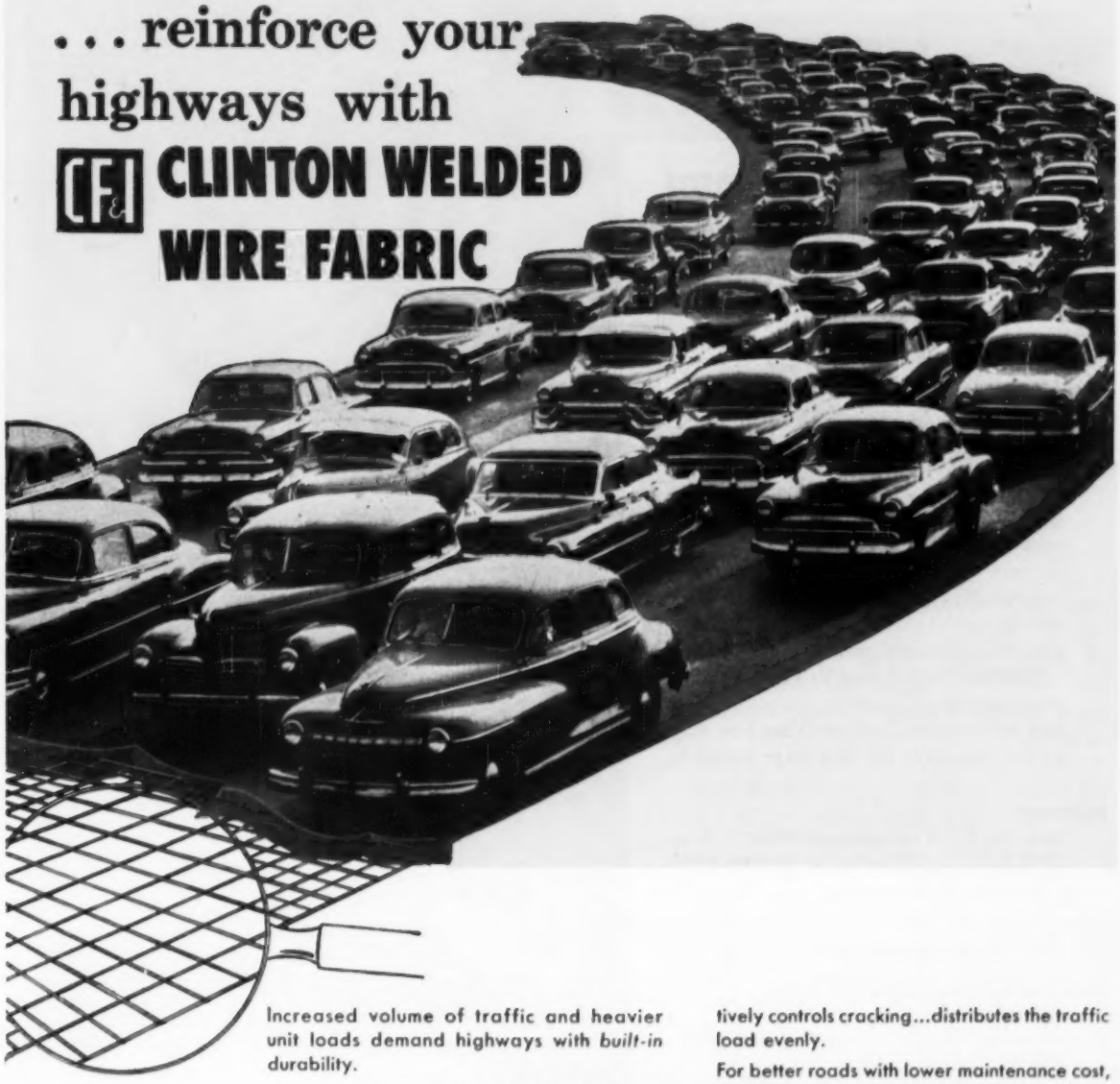

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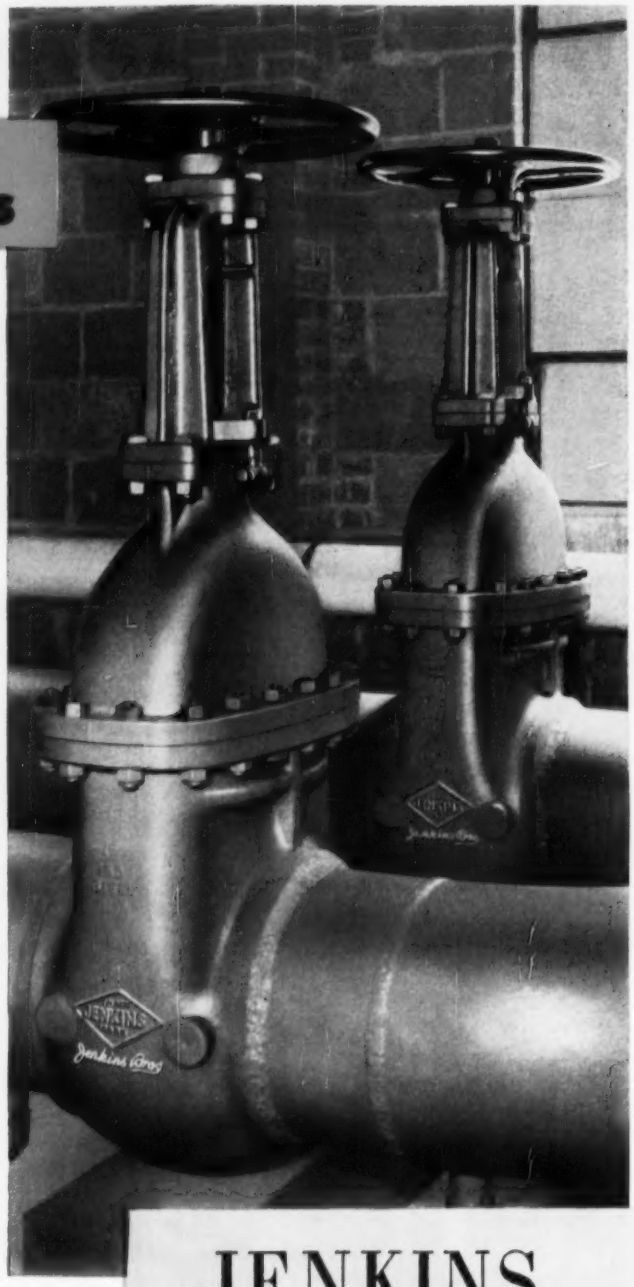

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ENGINEERING NEWS-RECORD

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THE CONSTRUCTION WEEK

CONTRACT FORM DISPUTE—The American Institute of Architects and the Public Housing Authority have begun negotiations to mitigate punitive clauses in Section 38 of the authority's revised standard contract form. At issue (ENR Feb. 23, p. 17) are clauses that would require architects to repay the federal government for "any" loss resulting from negligence. The word "any" is one cause of concern; the other is that PHA, not the local authority, determines whether negligence has occurred.

Underscoring the urgency of an agreement between AIA and PHA is the fact that architects and engineers interested in design contracts for public housing can't get insurance that would cover such an all-embracing indemnity clause.

LUMBER PRICES—New freight rate increases threaten a boost in lumber prices. The Interstate Commerce Commission has permitted a maximum increase of 6 cents per 100 lb on lumber and articles listed in tariffs taking lumber rates. Maximum increase on building woodwork and millwork is set at 7 cents per 100 lb.

Southern pine prices are already on the way up—for another reason. Southern mills are having to increase wages to comply with the federal $1 per hour minimum wage law that becomes effective March 15. New York builders will pay an additional $2.50 per Mfbm for 2 x 4s and perhaps more later. Cleveland prices will be up $1. San Francisco expects at least a $4 per Mfbm increase.

$100 BILLION IN FUTURE WORK—Heavy construction in the planning stage is nearing $100 billion. ENR's backlog of proposed work continues to rise sharply, hitting a record $96.5 billion on Feb. 29. Projects proposed in January and February shot up $5.3 billion, 84% above '55. Public and private work are up the same percentagewise but public works bulk largest with $2.9 billion. Industrial plants were more than triple the volume proposed a year ago and account for nearly half the '56 private total.

FEDERAL BUILDING PROPOSAL—The largest federal office building outside the Washington, D. C. metropolitan area may be built in San Francisco as a $45.3-million lease-purchase project. The Budget Bureau has approved the proposal, which is now before the Senate and House Public Works Committees.

The proposed multi-story air-conditioned structure with 1,600,000 sq ft of gross floor area would house federal courts and offices. It is hoped to locate the building in or adjacent to the area which San Francisco has planned for a civic center.

ONE OF A SERIES . . .

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The RIGHT ROLLER DESIGN and QUALITY CONTROL

The design and quality of the *rollers* play a large part in the performance of a cylindrical roller bearing. At right are some of the vital factors which must be considered.

All these factors are scrupulously controlled by the most modern precision equipment to insure maximum performance and life for every HYATT Roller Bearing. You'll find more details in HYATT General Catalog No. 150, or your nearby HYATT Sales Engineer will gladly help you choose the type best suited to your requirements. Remember, HYATT is America's *first* and *foremost* maker of cylindrical roller bearings. Hyatt Bearings Division of General Motors, Harrison, New Jersey.

GM GENERAL MOTORS

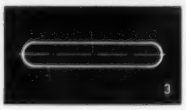
HYATT ROLLER BEARINGS

1. DISTRIBUTION OF LOAD WITHIN THE BEARING

Rollers are subjected to load only while in the "load zone," with maximum load while on the line of action of the bearing load, as shown in diagram 1. The theoretically perfect "load zone" extends from −90° to +90° from the line of action, but this is neither practical nor necessarily desirable. Under normal loadings, the actual "load zone" may range from 90° to 120°, depending on load and mounted internal clearance. This distributes the load so the load on the heaviest-loaded roller is approximately 5/N times the bearing load, where N is number of rollers.

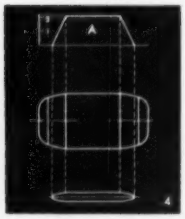
2. DISTRIBUTION OF LOAD WITHIN ROLLER'S AREA OF CONTACT

A cylinder deflects locally in the region of engagement when loaded between flat plates. The plate also deflects, so the original line of engagement is broadened into a "dog-boned" area under load, as shown in diagram 2. Moreover, deflected cylinders must gather in metal at their ends in *two planes, and this end-loading effect can seriously reduce the life of a cylindrical roller bearing.* All HYATT rollers have generous corner radii or blended chamfers to reduce end effect; and all HYATT Hy-Load rollers also have crowning to allow the contact area to "fade out" evenly (diagram 3).



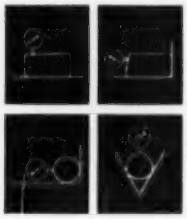
3. DISTRIBUTION OF LOAD ACROSS ROLLER

The unit load on any roller is uniformly distributed axially except at the crowned ends where it drops off to zero as shown in diagram 4. The summation of unit loads represented by area A is the total roller load. This same load under misalignment results in an area equal to area A; but maximum unit load is considerably greater and the bearing will have a shorter life than a properly aligned one. When the same total load is applied to an *uncrowned* roller, an even higher unit load results. This demonstrates the value of crowning when misalignment occurs.



4. EFFECT OF ROLLER QUALITY ON BEARING PERFORMANCE

Lack of roller quality control has a very adverse effect on performance: 1. A roller with excessive *taper* tends to uneven load distribution and abnormal temperature rise. 2. A roller with excessive *end square* tends to noisy bearing performance. 3. A roller with excessive *two-point out-of-round* tends to poor segregation and poor bearing life. 4. A roller with excessive *three-point out-of-round* tends to noisy bearing operation. 5. A roller with *poor finish* tends to wear on all operating surfaces and noisy operation. 6. A bearing with excessive *roller-to-roller diameter variation* tends to poor bearing life. 7. A bearing with excessive *roller-to-roller length variation* tends to poor thrust capacity, abnormal temperature rise.



WASHINGTON OBSERVER

Outlook for construction is firmed up by Eisenhower's decision to run again. All along, he and his team have been generally on the side of bigger public works, more federal aid to housing, and the like. The big difference: In general, Eisenhower has insisted on non-federal agencies, or private industry, sharing the cost if possible. This is the so-called "partnership" principle.

The GOP politicos will be under pressure to crack the whip on construction issues—especially if Congressional candidates can show that it will bring them needed votes in the November election.

House approval of Upper Colorado project by 2-to-1 vote is a case in point (see page 23). Before Eisenhower spoke out at the last minute, the opponents still had some hope of stopping the bill. After the President said he needed it—and the White House staff put the pressure on doubtful congressmen—the opposition caved in, and proponents won by a margin of 120 votes—256 to 136.

•

On other election-year issues, Eisenhower pressure is crucial, according to private opinion of top politicians in both parties.

Final approval of multi-billion highway program is possible but it is in considerable doubt unless the White House takes a hand. Up to now, the GOP strategy has been to let the Democrats lead the way, particularly on the politically-hazardous issue of raising taxes to meet the cost.

Now, the GOP has tax recommendations to make, for the first time. Top Republican tax man, Congressman Dan Reed, proposed a special tax on big trucks, which the Democrats—and the Ways and Means Committee—have adopted. The tax is a special annual registration fee at the rate of $1.50 per 1,000 lb if the truck has a maximum loaded weight of more than 26,000 lb. For a 27,000 lb vehicle this means a fee of $40.50; for a tractor-trailer unit of 100,000 lb loaded weight, the fee would be $150 per year.

The special tax on trucks would be in addition to Democratic-sponsored across-the-board excise increases on motor fuel, tires, tubes, and retread rubber. Manufacturers sales tax on trucks and buses also would be increased to 10% from 8%.

School construction grants are doomed unless Eisenhower takes the lead. Proposal to put an anti-segregation rider will block passage by Congress, otherwise. If the Administration comes out strongly against this, the bill's chances go up from zero to at least 50-50.

•

On military construction, the biggest single item, the President has the last word. If he decides to go along with those trying to boost military spending, then they can have their way. If he says the additional money for weapons and bases isn't needed, then it just won't be voted.

On flood control, Eisenhower added new starts last week, but he did this without increasing the Army Engineers' civil works money request that went to Congress in January. New request would: (1) Start construction on four projects; (2) Accelerate construction on four additional projects; (3) Grant $1-million to speed construction plans for four more flood-control works, and (4) Add $400,000 to funds already requested for flood-control surveys in California and Oregon. Requests for other projects were trimmed to provide funds for the $6.6-million increase.

•

Eisenhower has beefed up his White House staff again with the appointment of Maj. Edward P. Curtis (Ret.) as Special Assistant for Aviation Planning. He'll deal with all problems—including airports—of modernizing air traffic facilities and meeting the requirements of the jet age.

Construction men in Washington see this as a straw indicating the appointment of a White House co-ordinator of water resources.

In 11 years, 7½ million tons were hauled—at less than ½¢ per ton!

A large Southern cement company decided in 1942 to install a conveyor belt system to carry Portland cement rock (90 lbs. cu. ft.). This material had previously been carried by trucks over a 2¼ mile road at a cost of over 8¢ a ton. After 5 years of operation, the belt system had paid for itself, besides keeping the plant running without worrying about gas and tires for trucks throughout the war. Estimated cost per ton was less than ½¢!

The United States Rubber Company belts were used as follows:

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These belts ran an average of 40 hours to 84 hours a week, year after year.

Belts nos. 1 and 2 from Surge Bin were removed after 8 years. The other Surge Bin belts were replaced after 11 years and 1 month's service, and over 3000 feet sold to various sand and brick plants at $1.50 per foot. These belts were replaced by new "U. S." belts.

"U. S." Three-Way Engineering is responsible for such a remarkable performance. "U. S." belt engineers worked closely with the designers of the conveyor equipment and the engineers of the cement company. The result, as always, is the most efficient and economical belt for the job. That is why cost-minded plant operators call on "U. S." engineering and conveyor belt experience to solve any materials-handling problem. U. S. Conveyor Belting is obtainable through any of the 27 "U. S." District Sales Offices. Or write us at Rockefeller Center, New York 20, N. Y.

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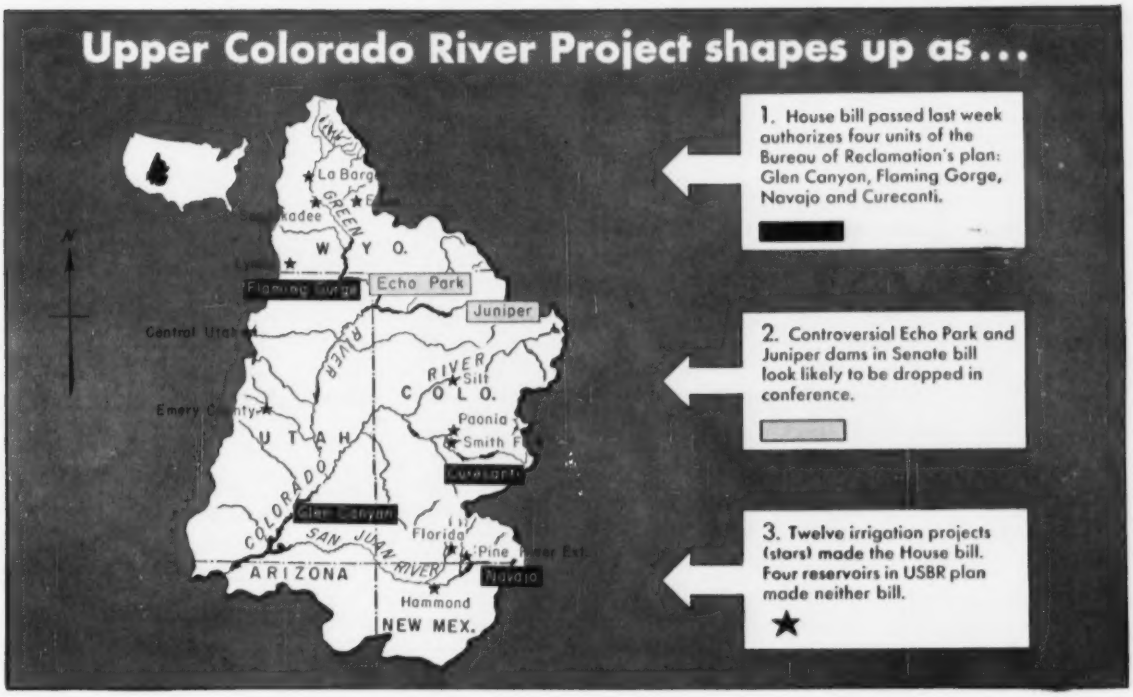


Reclamation Gets $760-Million Prize

Construction could begin within a year and a half on the Upper Colorado project. Washington officials indicated this week that contracts to begin work on 700-ft-high Glen Canyon Dam—key unit in the basin storage plan—may be let in early 1957.

House passage last week of the $760-million initial phase of the Upper Colorado program means that the Bureau of Reclamation's comeback (ENR Mar. 1, p. 21) is off with a bang.

Although the measure must still be meshed with a Senate-passed version of last year, Reclamation is already busy getting preliminary planning under way.

President Eisenhower asked in his Budget Message for $8 million with which to initiate construction planning on 12 scattered irrigation projects and three large initial storage units—Glen Canyon Dam, Flaming Gorge Dam, and the Navajo project.

USBR is confident that this money will be forthcoming in the 1957 public works appropriation.

A House-Senate conference this week is expected to iron out the differences in the two bills. The Senate last session passed a measure authorizing construction of controversial Echo Park Dam, a key storage unit which would cost $176 million, store 6.5 million acre-feet of water, and harness a hydroelectric capacity of 200,000 kw. Echo Park was knocked out of the House bill because it would have flooded part of Dinosaur National Monument. But now Echo Park is sure to be knocked out of the Senate-House compromise.

There are four big dams

Here is the House-approved project:

• **Glen Canyon Dam**—On the Colorado River 13 mi downstream from the Utah-Arizona border would be a concrete, curved, gravity-type structure rising 700 ft from bedrock. It would be 1,400 ft long and cost $421.3 million according to the House authorization. (The Upper Colorado River Commission, agency which administers the Colorado River compact and the Upper Colorado River Basin Compact, estimates cost at $379 million, and shaves cost estimates on all the other units a corresponding 10%.) Glen Canyon Reservoir would extend 186 mi upstream, cover 153,000 acres, and store 26 million acre-feet of water. It would create a capacity of 800,000 kw. Proponents claim its silt-catching function would prolong by some 200 years the life of Hoover Dam, which is located downstream in the lower basin.

• **Flaming Gorge Dam**—On the Green River in northeastern Utah, 32 mi downstream from the Utah-Wyoming line is planned as a concrete, gravity-type structure to rise 440 ft above the river. Cost: $82.9 million (appropriation request of $74.6 million; Compact Commission estimate of $57.8 million). Length: 900 ft. Storage: 3.9 million acre-feet. Power: 72,000 k.

• **Navajo Dam**—A rolled, earthfill with volume of 26.9 million cubic yards, this dam would rise 335 ft from streambed, run 3,750 ft in length cost: $36.5 million. Capacity: 1.5 million acre-feet. The stored water, producing no power, would be used as gravity diversion for water to irrigate nearby lands and, in conjunction with one of the participating irrigation units (San Juan-Chama), would constitute a source of supply for downstream ir-

. . . Upper Colorado River project

rigation in exchange for natural flow diverted upstream.

• **Curecanti Dam**—Authorization for this unit is conditioned on a finding of feasibility by the Reclamation Bureau. It would consist of a reservoir on the Gunnison River formed by Blue Mesa Dam and three downstream reservoirs—Narrow Gauge, Morrow Point, Crystal. The bill limits water-surface elevation of Blue Mesa Reservoir to 7,520 ft; it could store 940,000 acre-ft. The three downstream reservoirs would have only nominal active storage capacities, being designed primarily for power head development.

A recent version of USBR's plan for the Uppen Colorado included Cross Mountain Reservoir downstream from Juniper on the Yampa River in Colorado; Split Mountain and Gray Canyon Reservoirs on the Green River in Utah; and Whitewater Reservoir on the Gunnison in Colorado. None of these four projects is included in either House or Senate legislation on the project.

Twelve irrigation units

In addition, the House approved these 12 participating irrigation units, the $312-million cost of which will be repaid chiefly by power revenues from the big dams:

• **Central Utah**—In the eastern Bonneville Basin in central and northeastern Utah, the unit would include construction of Strawberry Aqueduct along the south slope of the Uinta Mountains, enlargement of Strawberry Reservoir with Soldier Creek Dam, enlargement of the reservoir's outlet tunnel, construction of five power plants with capacity of 61,000 kw, and a number of other reservoirs for regulation, storage and exchanges. Wasatch Aqueduct, canals and distribution system would be built as needed and drainage would be provided. The project would irrigate 28,540 acres of new land and supply supplemental water for 132,000 acres and furnish 48,800 acre-ft of municipal water. Cost of the initial phase would run to $231 million.

• **Emery County**—In east-central Utah on the San Rafael River, these works would include a dam and reservoir, diversion dam, canal, laterals, and drains. They would irrigate 3,600 acres of new land and supplement 20,450 acres. Cost: $9.9 million.

• **Florida**—In southwestern Colorado in the Florida River Valley, this unit would consist of a diversion dam, enlargement and extension of existing canal, and distribution laterals and drains. It would irrigate 6,300 acres of new land, and supplement 12,650 other acres. Cost: $6.9 million.

• **Hammond**—In northwestern New Mexico along the San Juan River, Hammond would be a diversion dam, canal, distribution laterals and drains. Irrigation: 3,670 new acres. Cost: $2.3 million.

• **La Barge**—In southwestern Wyoming in the upper end of the basin, this project extends 40 mi along the west side of Green River. Works would include a diversion dam, conveyance canal, and distribution laterals. Irrigation: 7,970 new acres. Cost: $1.7 million.

• **Lyman**—In southwestern Wyoming, just above the Utah line and along Blacks Fork, a tributary of the Green, works include a reservoir, conveyance canals, drainage facilities. Irrigation: supplemental water for 40,600 acres. Cost: $10.6 million.

• **Paonia**—In west-central Colorado on the North Fork of the Gunnison, this already-authorized and partially-constructed project would be extended. Works include a dam, canal, siphon. It would serve 17,040 acres, including 2,210 in new land. Cost: $6.9 million.

• **Pine River Extension**—In southwestern Colorado and northwestern New Mexico on the Pine River, these works would consist of a diversion dam, enlargement and extension of canals, and distribution laterals. Irrigation: 15,150 new acres. Cost: $5 million. Storage water would be obtained from existing Vallecito Dam.

• **Seedskadee**—In southwestern Wyoming on the Green River below the LaBarge project, Seedskadee would include a diversion dam, conveyance canals, distribution laterals. Irrigation: 60,720 new acres. Cost: $23.3 million.

• **Silt**—In west-central Colorado between Rifle and Elk Creeks, this unit would be a dam, reservoir pumping system, rehabilitation of existing canal, and new laterals and drains. Irrigation: 1,900 new acres and supplemental for 5,400 acres. Cost: $3.4 million.

• **Smith Fork**—In west-central Colorado along Smith Fork, a Gunnison tributary, this works would include a dam, diversion dam, canals, laterals. Irrigation: 2,270 new acres, supplemental water for 8,160 acres. Cost: $3.4 million.

• **Eden**—Already authorized and under construction, this unit in Wyoming was added because repayment is to be aided by the basin plan's power revenues. It would irrigate 1,660 new acres and supplement flow to 9,540 others. Cost: $7.3 million.

These 16 units make up the initial phase of an overall basin development program which ranks second only to the Missouri Valley in this country. They represent a slimmed-down version of the original scheme drawn up by the Bureau of Reclamation, and they do not include Echo Park, termed a vital link in the drainage chain.

But they do provide the essentials demanded by the upper basin states to regulate the flow of one of the world's most erratic rivers.

The Colorado is snow-fed. During the last 60 years, 1955 figures of the Bureau show, annual flow in the upper basin has varied from a high of 22 million acre-feet (1907) to less than 5 million (1934). During flood years, much of the river's waters flow uninterrupted into the Gulf of Mexico.

Pollution Control

House bill drops bombshell, proposes $1 billion in federal grants to cities

Hearings begin March 12 on a House bill which differs in one very important respect from S. 890, the compromise legislation already passed in the upper house to create a permanent water pollution control law.

It would authorize up to $100 million a year as matching funds to cities for sewage treatment plant construction, grants to be cut off when $1 billion is disbursed.

This provision by Rep. John A. Blatnik (D., Minn.), sponsor of the bill (HR 9540), is far beyond anything yet proposed as federal aid in legislation to supplant the expiring Water Pollution Control Act of 1948. The 1948 law had an authorization of $22.5 million a year as available for loans at 2% for the first five years of its enactment, but no loans were made.

Congressman Blatnik's financing idea is bound to raise a storm of controversy. Those in favor will see it as the $100 million needed to raise a $400-million-a-year spending rate to the $500-million rate needed to clean the nation's streams of sewage in ten years. But those against will argue that hope of federal aid will stiffle the present unaided spending of municipalities, resulting in a slow-down of progress on the problem.

In another important—if less spectacular-respect the House bill differs from S. 890 by spelling out enforcement procedures against interstate stream pollutors. A conference of state agencies involved, a public hearing, and federal recommendations would all precede any ultimate action in federal courts.

Baltimore Port Plan

Five-man port authority gets legislature approval

With financing resting entirely on new taxes on the state's business community, a Maryland State Port Authority got a green light from state legislators last week.

A bill passed by the state's General Assembly on the last day of its 30-day session sets up a five-man authority to begin operations July 1 that will concentrate its efforts on shipping and marine facilities, and not on vehicular traffic facilities. A special legislature session, to be held shortly, may take some further action on the enabling legislation.

Major fight in establishment of the authority was the battle of rural counties not to be burdened with expenses which they saw as of benefit to the City of Baltimore and other communities with shipping interests; and of objections of many civic groups to an authority taking over jurisdiction and control of what they consider to be within local areas and problems of operation.

In the course of lengthy and acrimonious debates, the legislators turned down proposals for a raise in gasoline taxes, a tax on newspaper and billboard advertising and others, and a $15-million bond issue backed by the state's credit and secured by revenues of the Susquehanna, Potomac and Delaware River Bridges and the new Patapsco Tunnel.

As approved, the authority will be financed out of a ½% increase in the tax on corporate incomes, expected to produce $2,144,000 in the 1957-58 fiscal year. Baltimore business interests—unhappy at a tax increase—accepted the raise nevertheless on the basis that at least the extra money would go into an investment that would benefit the business community above others.

When the authority goes to work in July, its first business will be to draw up a master plan for the Port of Baltimore. After that, it will probably issue bonds based on anticipated revenues (from city-owned and other port facilities to be taken over) for about $15 million.

One of the first projects of the authority may be construction of an $8.5-million cargo pier.

Given a range that covers the whole state, the authority may spend its money for port promotion to combat other ports and the St. Lawrence Seaway; for construction of new or improved facilities in the ports; and for service facilities.

Story high—with web cut out for door openings . . .

Girder Will Carry 23 Floors

Steel plate girders, one-story high and 54 to 79 ft long, will eliminate columns from the trading floor of the New York Stock Exchange annex, which will occupy the lower floors of a 27-story air-conditioned building now rising at 20 Broad St. The 39 to 57-ton girders will be installed in the fifth story to support the upper floors. Inside construction below that level can be removed later, if desired.

Weekday congestion in the narrow streets complicates truck and crane operation to such an extent that some of the girders are being hauled in and placed on Saturdays and Sundays.

Except for bolted connections of the fifth-story girders, the steel frame will be welded, making the new skyscraper New York's largest welded building.

Architects are Kahn & Jacobs and Sidney Goldstone. Structural engineer is Charles Mayer. George A. Fuller Co. is the general contractor. Steel erector is Lehigh Construction Co.

F. S. Fitzpatrick, National Construction Leader, Dies

F. Stuart Fitzpatrick, manager of the Construction and Civic Development Department, U. S. Chamber of Commerce, and a nationally-known leader and writer in the construction field, died March 2 in Washington, D. C.

Fitzpatrick, who was 64, provided the leadership under which all elements of the diversified construction industry could unite to maintain the independence of private enterprise and resist over-zealous government control during emergencies. For many years he had served as organizer and sponsor of a number of industry-wide construction councils that took in all branches of the business and their national associations.

Fitzpatrick's career with the U. S. Chamber of Commerce staff began in 1918. Shortly afterward, he helped set up the War Service Commission, a World War I liaison organization between the War Industries Board and the Construction Industry. For the past 25 years he served as manager of his department, and recently received an award from the Producer's Council for exceptional services to the construction industry.

Road Bonds Favored

Michigan road needs can be met with $500 million

Michigan's road needs can be met satisfactorily within a 15-year period by supplementing present income through the issuance of $500 million in bonds.

That is if the federal government continues to grant federal aid at the current level and provides funds to cover the cost of 90% of work on the interstate system. This is the conclusion of a report on financing modern highways for Michigan prepared by Richard M. Zettel and Richard R. Carll for the Michigan Legislative Highway Study Committee.

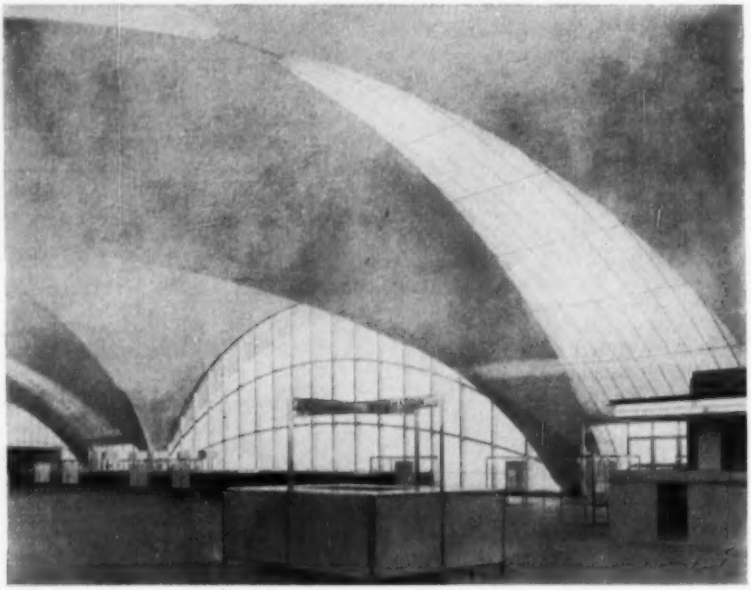
The financial report supplements one on Michigan's highway needs compiled recently by the Automotive Safety Foundation (ENR Dec. 22, 1955, p. 16). In addition to the bonds, which should be issued during the first ten years of the program, the Zettel report proposed an equalization of Michigan's highway user taxes and a revised distribution of the income from those taxes to government agencies. The state would get 43% of the total under the proposed plan, counties 37.4% and cities and villages 19.6%.

• **Ton-mile tax favored**—The authors of this financial report favor a ton-mile tax as the most equitable form of distributing the cost of highway construction and maintenance. However, they do not propose complete abandonment of Michigan's present system of taxing highway users. Instead, they propose a modified system that would combine the existing weight tax with a mileage tax, both based on the empty weight of vehicles. The mileage tax would be applied to trucks and buses weighing 7,000 lb or more and to tractors, semi-trailers weighing 5,000 lb or more. Vehicles under these weights would pay only the weight tax.

Under present statutes, only common-carrier and contract-carrier trucks pay a mileage tax in Michigan, and that tax is estimated to produce less than 1% of the user-tax income.

The report also makes the recommendation that the diesel-fuel tax in Michigan be increased from 6 to 8 cents per gal as a step toward equalization of the user-tax structure. Under the existing gasoline and diesel fuel-tax structure, passenger cars pay the highest rate, 1.962 mills per ton mile. Trucks contribute less per ton-mile, the amount declining generally as the empty weight increases, and combinations pay still less.

OUTSIDE of terminal looks as though three pairs of huge concrete Quonset huts had been cut in half—fitted together in the center to form three crosses.



INSIDE, the main entrance is brightly illuminated by floor-to-ceiling glass walls, some extending well up into the crown of the vaulted roof.

Three-Domed Air Terminal Finished

In just two days, St. Louis, Mo., will dedicate its $5.9-million copper-sheathed, 412 x 123-ft airport terminal building. The domed structure consists of three pairs of thin-shell cylindrical concrete barrel arches that rise to a height of 32 ft above the floor (ENR June 20, 1955, p. 50).

Stiffened by both diagonal and peripheral concrete ribs, the shell is 4½ in. thick at the crown and 8 in. at the edges. It is covered with 2.3 acres of copper.

The building is constructed on three levels—the main entrance under the domes being the upper level, with two floors below facing onto the field. Walls are of heat-reducing, glare-resistant glass.

Designed to handle up to 1,200,000 passengers annually, the building has surrounding parking space for approximately 1,400 cars.

Built for the Board of Public Service of the city, it was designed by architects Hellmuth, Yamasaki & Leinweber; William C. E. Becker was structural engineer; and L&R Construction Co. was the general contractor—all of St. Louis. Plans were based on a study by Landrum & Brown, airport consultants of Cincinnati, Ohio.

AHONAS meeting in Boston is told . . .

How to Get More Highway per Dollar

There's a deceptively simple formula to assure that the U. S. gets its money's worth out of any highway dollars spent—very particularly if present plans for an accelerated federal highway program go through:

The contractor has to make a profit and he has to be able to use his working capacity to its fullest extent. If he can do that, he can bid lower, and thus produce more mileage of good highways. And the man who can bring about this happy state of affairs is the highway engineer, by simpler designs, firm commitments, quick decision, provision of right of way and working space at the right time.

Those points stood out strongly after more than 700 members of the Association of Highway Officials of the North Atlantic States met at Boston. Not surprisingly, they didn't come out of the formal papers, but out of an informal panel discussion to which the engineers had invited three top contractors, and out of corridor conversations during the sessions.

• **Function not frills**—Burl A. Wilder, of Savin Construction Corp., said:

"A major point is design. After all, is the bridge over the highway going to be used as a monument for future generations, or is it to be a practical, useful facility? I say do away with the monuments, the fancy stonework, the tapered piers, the pretty but useless haunches in favor of simple designs, simplified formwork. And spend the money you save on better drainage and clearing right of way. Another thing—establish standards for the whole job. And send them out to prospective bidders ahead of the bids, so contractors can figure costs closer, determine the types of machines they'll need and can use profitably.

"Widen the right of way where you can, to give the contractor a better chance to get borrow material without paying exorbitant prices. And pay him as promptly as possible."

• **Consulting engineers are okay, but**—Wilder had a further point, which drew considerable applause from the assembled highway officials. He wanted better supervision on the job and upgrading of district engineers—but he thought consulting engineers were being used too freely.

"In the list of obstacles to better and cheaper work, include the use of consulting engineers for routine work which you and your staffs are better qualified to do," he said. "They are often inexperienced, cause delay and bickering. On big complicated work I've no objections, but for ordinary work, you can do it better."

Reinforcing part of that comment was Philip V. Corey, President of W. H. Hinman Co., of Augusta, Me. He called for better recognition of district engineers, better pay for them, and for freeing them of endless paper work so that they can spend more time doing engineering work, less as office "paper pushers." Cory also called for training programs both for highway department inspection forces and for contractors' employes at the level of foreman, for better mutual understanding of problems and solutions.

• **Let us work**—"A year ago," said Leroy W. Kern of H. T. Campbell Sons Corp., Baltimore, "the ARBA made a survey, and reported that contractors were using an average of 46% of their capacity on highway jobs.

"Just think what that means.

"Supposing that the original $101-billion overall highway program goes through right now. Even if contractors are permitted to work at 75% of their capacity, the first year under the program would require 25% more capacity than contractors had in 1955. By the fourth year of the program, at that rate, it would require 106% more capacity.

"The major contribution to such waste of men and machines is made by human obstacles that prevent us from working efficiently. I'd list them this way:

"Lack of funds provided on a regular basis so that the contractor can look forward to an orderly expansion or progression of work. That's a problem for the highway officials and the legislators.

"Bad timing and bad organization in advertising bids. Money is wasted by not giving the bidder enough time to survey the site and do his figuring and by not grouping the bids in such a way as to make possible advantageous combinations.

"Delays in acquisition of right-of-way, and delays in releasing right-of-way and clearing utilities.

"Holdback of funds as retained percentages and for other reasons."

• **Pay the troops**—Conversation and questions from the floor, under expert handling by B. D. Tallamy—head of the New York State Thruway Authority—who acted as moderator for the session, developed support for the general contentions put forth by the contractors, and some other points.

Said John A. Volpe, Commissioner of Massachusetts Department of Public Works:

"We must have adequate compensation for our engineer personnel—we officials must devote all necessary time and effort to fight for better salaries for our forces. Too much responsibility, rests on these men to make it possible for us to attract good men for almost no money."

• **Honors and action**—The three-day meeting produced—as expected—a formal resolution backing the highway program now before Congress, with the comment—seconded by Massachusetts' Governor Christian A. Herter in a welcoming address—that the principal objective now is to get some kind of an accelerated highway program through and operating. "We can always make compromises later," said Herter, "the thing is to have no further delay in getting started."

It also produced the election of John O. Morton, New Hampshire Highway Commissioner and chief engineer as President of AHONAS for the coming year, succeeding Russell H. McCain, Chairman of the Maryland State Roads Commission. Other speakers included C. D. Curtiss, Commissioner of the U. S. Bureau of Public Roads; E. W. Kilpatrick, New Jersey State Highway Engineer; Brig. Gen. Robert J. Fleming, Jr. of the Corps of Engineers and J. B. Wilbur, head of the Department of Civil and Sanitary Engineering at M.I.T.

ASA to Sponsor Talks About Ceiling Modules

Modular measure for integrated ceiling components is the topic set for a March 22 exploratory meeting sponsored by the American Standards Association.

The discussions are expected to indicate the present extent of interest in size coordination for ceiling units and to identify the various factors bearing on the subject so that the ASA committee on modular measure can set up a study group representing the interests involved.

The session will open at 9:30 a.m. in the Netherlands Plaza Hotel, Cincinnati, Ohio. Those who wish to attend or submit written statements are asked to notify William Demarest, Secretary, ASA Comm. A63, AIA, 1735 New York Ave., NW, Washington 6, D. C.

The Air Force Academy Job Is Set to Go . . .

. . . Buildings approved

Air Force Academy plans made another major advance last week as Air Secretary Donald A. Quarles signed five approvals that complete the basic planning for the academic area of the 27-square mile site at Colorado Springs, Colo.

At a meeting in Chicago, Quarles and his architectural consultants came to agreement with Skidmore, Owings & Merrill, principal architect-engineers for the Academy, on the designs of the administration building, the cadet social center and the guest house. Equally important, Quarles approved the overall landscaping plan for the academic area and fixed the location of the chapel.

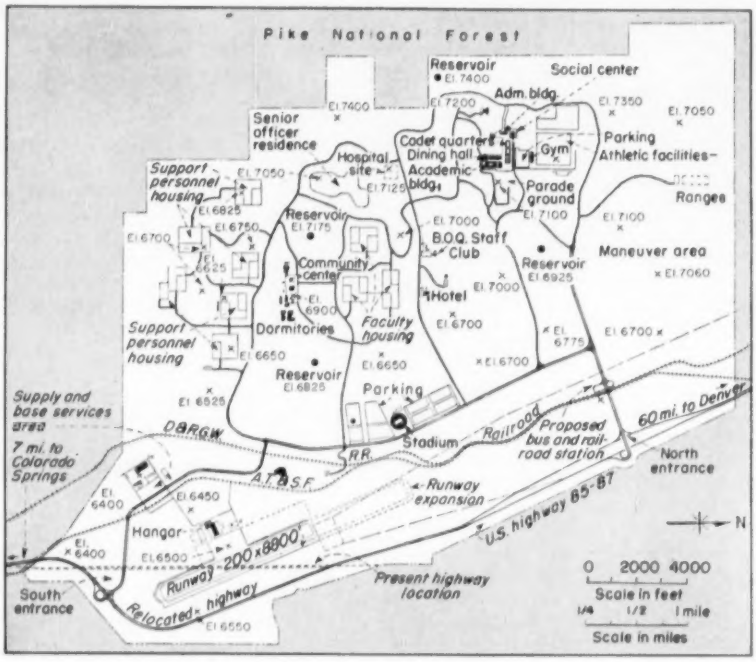
With the approvals, the architects got the green light for preparation of working drawings for all elements of the academic complex, except the chapel, which is still under design. The drawings, of course, will be furnished prospective bidders when the various jobs are advertised for construction contracts.

Designs of five buildings had previously been approved by the Air Force Secretary (ENR Feb. 2, p. 23). The accompanying pictures show what some of these will look like.

Last week's additional approvals were held up when the Secretary's three consultants and the A-E contractor failed to agree at a Feb. 2 meeting in Chicago. The A-E people now admit that the delay has produced improved designs.

Committee hearings have not yet been scheduled, but they should be starting within a few weeks. No additional authorizations are needed before the Appropriations Committee takes up the money requests. Congress authorized $125 million for the academy two years ago.

APPROVED DESIGN of library (left) and academic building (right) shows facade of masonry, glass, aluminum and stainless steel.



SITE PLAN on an area of finger mesas and valleys places cadet academic and living quarters at northeast corner and airfield at southeast.

. . . More contracts coming

With winter weather abating on the 27-sq mi Air Force Academy site in the foothills of the Rockies near Colorado Springs, big-scale construction is just around the corner. Col. Albert E. Stoltz, director of the Air Force Academy Construction Agency, has contract bid-opening dates scheduled from this month up to August, and is ready to add to the openings just as fast as Congress will appropriate funds from the $125-million authorization.

Thus, the $7 million in construction contracts under way since last fall will be swelled to $40 million by May, and probably to $80 million before the summer is over. Actually, unless progress on about this scale is achieved, the scheduled opening of the academy in the summer of 1958 will not be possible.

What Colonel Stoltz and his architect-engineers, Skidmore, Owings & Merrill, have in mind may be summarized by the following schedule of bid openings:

- March: Fifteen miles of roads; grading of academic area and athletic fields and construction of retaining walls; relocation of 3 mi of U. S. Highway 85-87; fabrication and erection of 1,121 tons of steel for a warehouse.
- April: Fabrication and erection of 1,316 tons of steel for the cadet quarters building.
- May: Fabrication and erection of steel for the academic building; another contract for roads.
- June: Foundations for cadet quarters and academic building; electrical and communications systems; heating and gas mains; sewage-treatment plant.
- August: Another contract for roads.

Behind this scheduling is a winter of intense work on the part of the staff and the architects-engineers in clearing up problems of site planning and in altering some designs to comply with Congressional criticism.

The site plan, published here for the first time, shows the location of the various academy installations and their relative elevations on the rolling

(*Continued* on page 32)

THE RED TRIANGLES INDICATE STRUCTURES BUILT ON RAYMOND FOUNDATIONS

Photo by Fairchild Aerial Surveys, Inc.

'Way down yonder in NEW ORLEANS...

217 STRUCTURES *REST ON* RAYMOND FOUNDATIONS

You're looking into the heart of downtown New Orleans from above the Claiborne Street Overpass. In recent years, the Crescent City's skyline has undergone a tremendous change, and beneath many of its new structures are thousands of Raymond piles. In the foreground you see the Texaco, California Company, and Shell Oil Company Buildings . . . all Raymond-supported. In the background, other Raymond foundation installations include: Claiborne Street Bridge, Higgins Shipyard and Kaiser Aluminum & Chemical Company.

While not shown in the picture, the five-mile Seawall on Lake Ponchartrain, the striking Pan American Insurance Building, and the gigantic Desire Street Housing Project are other New Orleans projects that testify to Raymond's wide and diversified experience. For over fifty years, Raymond has completed a variety of contracts, large and small, in major cities across the United States. May we apply this know-how to your next foundation project?

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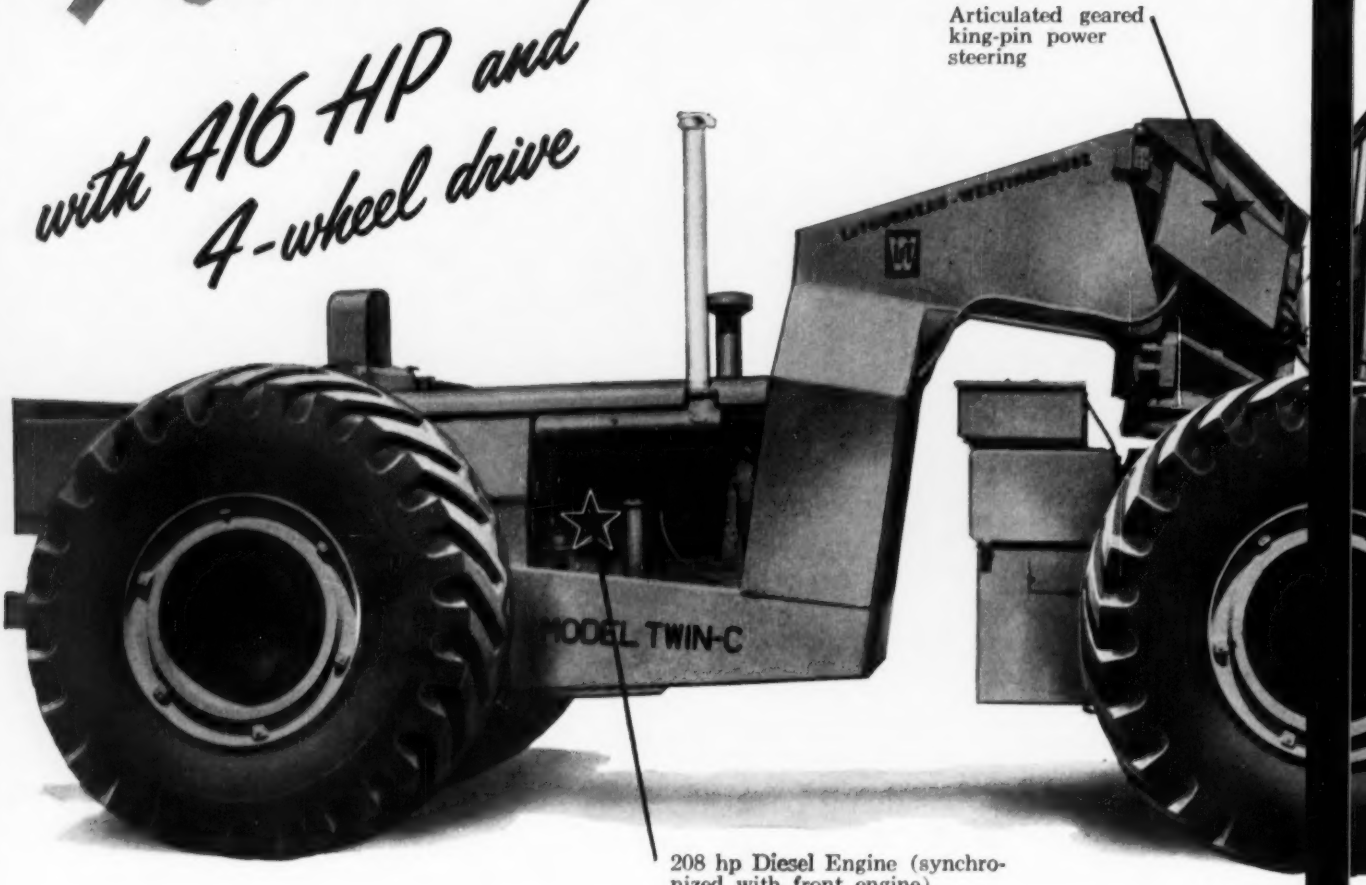

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One operator, and this powerful "Twin-C", pushes your biggest production scrapers for capacity yardage ... in less time than it takes 2 crawler-pushers with 2 operators. Rubber-tired speed, and articulated steer, give quick maneuverability for direct-line push... save seconds in picking up the next load. "Twin-C's" 416 hp push saves extra seconds in loading ... piles a bigger heap on a better packed load.

Synchronized power matches speeds of earth-movers — Speeds of Twin-C Pusher are matched to loading speeds of today's rubber-tired earthmovers. You take maximum advantage of combined power of loader and pusher to get big pay loads *fast*. Low-pressure, trouble-free torque-converters teamed with constant-mesh transmission in both front and rear engines of the "Twin-C" reduce costly "lug downs" and gear changes necessary in many pushers.

More usable power with rubber pushing rubber — Big 29.5 x 29 tires with 22-ply rating give "Twin-C" 2'5" wide ground-gripping traction to take advantage of its 80,000 lbs. weight. Tires are hydro-flated and have wheel weights. With both pushing tractor and

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B TOURNAPULL 25 cu. yds., heaped

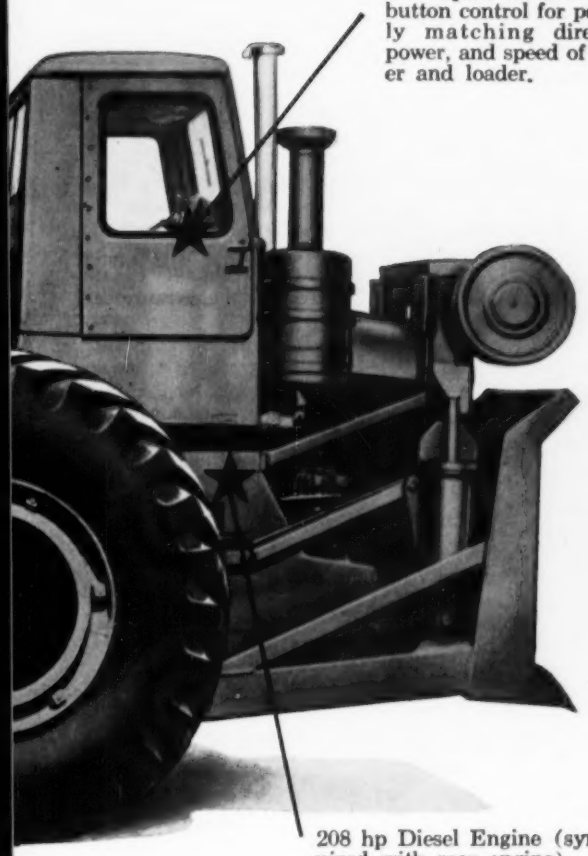
C TOURNAPULL 18 cu. yds., heaped

D TOURNAPULL 7½ cu. yds., heaped

Optional LeTourneau-Westinghouse equipment for use with Tournapull Prime-Movers: Rear-Dumps, Bottom-Dumps, Flat-Beds, Logging Arches and Skidders, Lift-and-Carry Cranes, Snow Plows, Bulldozers.

FASTEST push tractor...

Pusher



One operator uses push-button control for perfectly matching direction, power, and speed of pusher and loader.

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Powerful 80,000 lb. Twin-C Pusher on big, wide-base tires push-loads scrapers faster in shorter distances...permits use of more scrapers in fleet...eliminates delays waiting-for-pusher.

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Power-transfer differentials — Exclusive power-transfer differential matches pull to traction, automatically applies power to wheels on firmest footing, keeps big pay-loads rolling out in sand, mud, and loose materials. "Twin-C" decreases time lost because of bad weather and soft going ... increases length of work season ... with greater profit possibilities.

If your fleet includes production scrapers of any kind, you will want full information on this Twin-C Pusher. Ask your LeTourneau-Westinghouse Distributor for complete details.

Tournapull—Trademark Reg. U.S. Pat. Off., Twin-C—Trademark TW-1025-G

LeTourneau-WESTINGHOUSE Company

Peoria, Illinois

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HOW TO RUB or GRIND CONCRETE

Today, more and more builders specify a fine finish for concrete walls and ceilings. Because of this new requirement, and of the time and expense involved for hand finishing large areas, Stow Manufacturing Company has developed two, easily portable flexible shaft grinders for finishing concrete. These grinders are electrically powered.

Two methods are used to smooth off hardened concrete: wet rubbing and dry grinding. Wet Rubbing — required for smoothing green concrete to a plaster-like finish. Use slow speed grinding wheel or disc. Apply water while grinding. Wet concrete can also be painted on with a brush, then smoothed into holes with the grinding wheel. Dry Grinding—use a high speed grinding wheel or abrasive disc to smooth dry concrete.

Either of Stow's portable, electric grinders, the ½ HP model G40-C or the ¾ HP model JT-50, can be used for wet or dry grinding. Both models are available with open or totally enclosed motors, and are equipped with 8 or 12-ft. flexible shafts. Angle heads with different speed ratios can be selected. Write for STOW's pamphlet, Grinding Concrete for complete information on proper speeds, grinding discs and wheels for both wet and dry concrete finishing. Stow Manufacturing Co., Binghamton, N. Y. also makes a complete line of concrete vibrators, rotary trowels, and screeds.

STOW MANUFACTURING CO.
19 Shear St., Binghamton, N. Y.

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Name ..... Title .....

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City ..... Zone .... State .....

terrain, which, in broad terms, may be described as a series of finger-like mesas and intervening valleys extending out from the slopes of the Rampart Range of the Rockies. Starting at the north end, the maneuver area is located in a valley, with a mesa separating it from the next valley south, at the head of which the athletic facilities are located. Adjoining this latter valley is a mesa on which the academic and cadet living quarters are sited.

The next valley and mesa south are largely open areas accommodating a few widely separated buildings and a golf course, a sort of buffer zone between the cadets and the housing community center for the faculty and the support personnel. Housing is located in valleys, with the community center of stores, theater, etc., on a long mesa between. There is also a mesa along the south boundary of the site, shutting it off from that direction.

Below and east of the support-personnel housing is the supply area adjoining the airfield, which occupies the only relatively level area on the entire site. Strongly prevailing winds parallel to the mountains made a single runway layout possible, although its position will require a relocation of 3 mi of the main highway between Colorado Springs and Denver. A stream also flows westerly across the field, and it will have to be put in conduit under the runway, with a retention reservoir at its upper end east of the field to hold back temporarily the runoff from heavy rainstorms.

The airfield is at the lowest elevation on the site, while the highest is on the west boundary adjacent to Pike National Forest 7,900 ft.

Because of the differences in elevation, about 1,000 ft between the cadet area to the northwest and the airfield at the southwest, the problem of a road net was a serious one. How it has been solved is indicated on the map. As will be noted, there are a north and a south entrance to the site connected by a dual lane highway which will serve the airfield and the stadium. Taking off from it is a perimeter route, which will tie all of the facilities together and provide a point of departure for the internal roads. The objective has been to provide access for the general public, but without interference with the cadets or those living in the housing areas.

The contractors already on the site installing utilities and roads have worked through the winter, although slowed by some abnormal snowfalls. The construction of 9.5 miles of roads by the Nowers Construction Co., Pueblo, is about 70% complete. Water supply lines (ENR Nov. 10, 1955, p. 23) are even farther advanced by the Bell-Aire Pipeline Contractors, Inc., and by Wade Lahar Construction Co., Tulsa, which drilled a 371-ft-long tunnel to tap a new supply which Colorado Springs is bringing from the other side of the mountains in a new tunnel under the Rampart Range. In addition, Matelich & Hanson of Denver have three 800,000 gal reservoirs 40% complete. Sewer pipe is scattered along the roads and trails of the site, and the lines are about 20% finished by Brown & Olds Heating and Plumbing Co., Albuquerque.

A contract has also been let to the Combustion Engineering Co., New York, for $406,708 for equipment for two steam plants, and at the present time the American Construction Co., Colorado Springs, is building a full-scale mock-up on the site of two cadet living quarter rooms complete with equipment and furnishings. Another mockup will soon be started to aid in the selection of masonry for the walls of the main buildings, which will also include aluminum, stainless steel and glass. There are 33 of these buildings and while their general design—structural steel frames and flat slab concrete floors without column capitals—has been pretty well determined, the kind of masonry is still subject to change.

Kansas Turnpike Extension: "Unfeasible at This Time"

The proposed 134.6-mi Wichita-Hays extension of the Kansas Turnpike has been termed unfeasible at the present time.

Coverdale & Colpitts of New York, which has been studying economic possibilities of the extension, has informed the Kansas Turnpike Authority that estimated revenues fall far short of the amount needed to amortize construction costs.

It would take $94 million to build the toll road extension, according to estimates by Howard, Needles, Tammen & Bergendoff, Kansas City, Mo. The feasibility study indicated that potential revenue from the route in its first year of operation would be $2 million. But some $4.2 million would be needed to pay the cost of operation and to meet required interest and bond payments.

The proposed extension would have run from Wichita through Hutchinson, Great Bend and on to Hays. The economic report stated that the 46-mi segment between Wichita and Hutchinson had a "somewhat brighter" prospect, although not considered feasible at this time. This section, estimated to cost $33 million, would bring in revenues of $947,000 for the first year, but some $1.5 million would be required.

Swampy marshlands are the site of Hubbard Construction Company's 200,000-yard highway relocation job. Photo shows fill where new road connects with the old.

Rubber-tired rigs relocate highway through Florida tidal marsh

Heavy traffic into Florida's Patrick Air Force Base necessitated the relocation and improvement of State Route 402, right through a tidal marsh. The Florida State Road Commission contracted with J. H. Whitaker of Titusville Beach. The Hubbard Construction Company, Orlando, subcontracted from Whitaker for 200,000 yards of the dirtmoving. On this project, Hubbard included one C Tournapull and one C Tournatractor in their earthmoving fleet.

Wet going fails to stop "C" team

Hubbard's 16-yard Tournapull and 208 hp Tournatractor team worked along a 3½-mile section of the relocation job. To straighten and raise the road grade, rigs had to work through soft marsh that connected the old road with the new. Here, material consisted of loose sand, shell, and crystalized calcium or marl. Push-loaded by Tournatractor, the Tournapull moved this material from borrow pit about a mile to the road fill.

When heavy rains on the project closed the regular scraper borrow, C Tournapull loaded sand and shell out of the ocean-bed borrow ordinarily worked by dragline and trucks. Borrow was below the water table, so water kept seeping into it all the time rigs were loading. But, both units easily worked in water and consistently maintained good production. According to Job Superintendent, D. A. "Buck" Fuller, the "C" averaged 10 yards per load in about 37 seconds over an average 100' load distance. Rig averaged a complete 2.2-mile cycle in 10.8 minutes in spite of wet footing.

"C" walks out of loose sand

Tournapull's ability to get through soft, loose sand was a real asset on this job. "C's" power-transfer differential enabled the rig to pull out of soft spots by transferring power from the wheel on loose footing to the wheel on firmer footing. Positive power-steer through a geared kingpin also let the operator pivot the prime-mover from side to side to "walk" out of tough going.

Tournatractor . . . fast pusher

The 208 hp Tournatractor also played an important part in speeding this roadbuilding. Look at these major Tournatractor advantages on this or any other tough job and see if you don't think they're worth considering:

1. Tournatractor's fast pushing-speed, instant gear changes, and 8 mph reverse, increase daily output. On job described here, Tournatractor push-loaded the "C" in average of 37 seconds! Between push-loading, Tournatractor stripped the muck and vegetation in the borrow . . . kept busy all of the time.

2. Tournatractor reduces travel time between jobs by driving anywhere under its own power at speeds up to 19 mph. It is a fast traveler around the job, handles cleanup, dozing, and drawbar assignments, in addition to regular pusher duty.

3. With power traveling on sealed anti-friction bearings, the four big tires (21.00x25) take it safely through water, sand and muck without damage and wear to bearings and moving parts. Lubricants are not washed away, nor are abrasives carried into bearings. Maintenance is lower on Tournatractor than on crawlers because 4 wheels do the work of 500 moving track parts.

Judge their performance . . . on your job!

The fast-traveling, fast-working, rubber-tired Tournapulls and Tournatractors are modern lowest-net-cost-per-yard tools. See them work as a team, to judge their adaptability and profit opportunities for you.

On this 3½-mile marshland roadbuilding project, Hubbard Construction Company used a 22-unit earthmoving fleet. Since the borrow pit was mucky, Hubbard had his dragline remove the muck down to firmer footing. Then, the Tournapull-Tournatractor team helped build up grade from the borrow pit.

Tournapull, Tournatractor—Trademark Reg. U.S. Pat. Off. PT-918-H-b

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That black spiral stripe on the familiar red cover of "Inferno" shows at a glance that the steam hose selected for pile driving and other heavy-duty steam jobs will assure ***unquestioned safety,*** regardless of the severity of the service. There can be no mistaking an unsafe hose for the one built to stay on the job longer, without risk of bursting and consequent danger to men and damage to equipment.

"INFERNO" STEAM HOSE specifications include high-temperature tube; multiple-layer, braided steel wire carcass; wear- and weather-resistant "Synplastic"® cover. Sizes ½" to 3", inclusive, in maximum lengths of 50 feet.

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Chicago's Roads

Cook county will spend $87 million this year

Cook County, Ill. has programmed $87 million of expressway construction and highway improvements for 1956. It is, by far, the largest such program ever attempted by the county's highway department.

A total of $78 million has been earmarked for the expressway program, according to William J. Mortimer, county superintendent of highways. The remaining $9 million will be spent for widening and resurfacing 26 mi of Chicago streets and 36 mi of highways in suburban areas, on non-expressway routes. It also includes some grade separation construction and the purchase of additional right-of-way, estimated to cost about $660,000, for 41 mi of pavement widening in next year's construction program.

This year's expressway program will be financed with $73 million from the $245 million expressway bond issue authorized last year by the Illinois State Legislature (ENR July 14, 1955, p. 25). The remaining $5 million comes from an earlier bond issue and the county's share of state fuel taxes.

Six expressway routes in the Chicago area are included in the county's construction program. The Northwest Expressway receives the largest amount, totaling $21.7 million. Most of this will be spent for construction on 24 grade separation structures. Drainage facilities, however, will cost in the neighborhood of $2.8 million while $550,000 will be spent on right-of-way. An additional $9 million will be spent on feeder routes to the Northwest Expressway. This includes a $4.8 million bascule bridge over the Chicago River, two grade separations and $2.7 million for right-of-way.

About $21 million will be spent on the Congress Street Expressway, of which $2 million will be used to purchase right-of-way. The construction on this project includes a wide variety of items such as roadway paving, grade separations, drainage facilities, lighting, pedestrian structures, railroad relocation, and retaining walls—the largest item will cost $1.5 million.

A third major item in the program will be the acquisition of right-of-way for the South route, from Roosevelt Road to 107th and Doty Ave., estimated to cost about $22 million. Other expenditures under the program include: $2 million worth of right-of-way for the Southwest Expressway; $1 million of right-of-way for the Kingery Expressway; and $800,000 for interchange construction and landscaping for the Calumet Expressway.

D Tournapull Rear-Dump's ability to turn around in only 24'8" enables it to spot fast in tight quarters. With 10 to 11 passes of ¾-yard shovel, unit loads 8 pay yards in about 3 minutes. Big 10'11" x 5'10½" bowl opening, with low rear entry, makes loading easy.

Hauling from pit to crusher, "D's" average 900' distance in 1½ minutes... returning in about 55 seconds. Units' 4-wheel multiple-disc air-brakes assure positive control at all times... give operators complete confidence on winding roads and steep grades.

"Better than trucks where going is tough"

says Superintendent R. E. Merritt of Oregon's Jackson County

To speed delivery of rock from quarry to crusher, Jackson County Highway Dept. teamed up 2 D Rear-Dumps to handle all crusher requirements.

On the job the "D's" encountered tight loading quarters, rough quarry terrain and underfooting, and adverse grades on haul roads. Unit's speed and maneuverability, plus ease in spotting in restricted places, helped keep crusher well supplied with rock at all times.

1800' cycle in 9¾ minutes

When pictures were taken, the 11-ton "D's" had already moved 28,000 yards of rock to the crusher. Time studies showed that each "D" was averaging 8 pay yds. per load... 1800' cycles were completed in about 9¾ minutes, including 3.65 min. to load and a 3.95 minute waiting time.

"Work in closer quarters"

Comparing the operation of the Rear-Dumps to trucks, Supt. Ralph E. Merritt said, "The D Rear-Dumps are a lot better than trucks where the going is tough." Operator Floyd Sherman added, "'D's' can get around in a lot closer quarters, too."

Safer than trucks

Besides being faster and more maneuverable than ordinary trucks on rough roads, D Rear-Dumps are also safer when dumping loads. Front-wheel-drive on "D's" keeps power and traction on solid footing well ahead of rear wheels. Because body does not need to clear frame, springs, axle, or differential, its center of gravity stays low, even during dumping. Over-size multi-disc air brakes — with more braking surface on one wheel than comparable-size trucks have on all four — prevent creeping or rolling, especially when dumping.

If you have a tough hauling job... better check D Rear-Dump's advantages for yourself. See how the 11-ton "D", 22-ton "C" or new 35-ton "B" can help you.

Tournapull—Trademark Reg. U.S. Pat. Off. DR-903-P-b

At crusher, "D" dumps 8-pay-yard load in 20 seconds. Operator Floyd Sherman said, "You can get around in a lot closer quarters with 'D's' than you can with a truck." He added, "These D Rear-Dumps are not as hard on the operator as many other types of haulers."

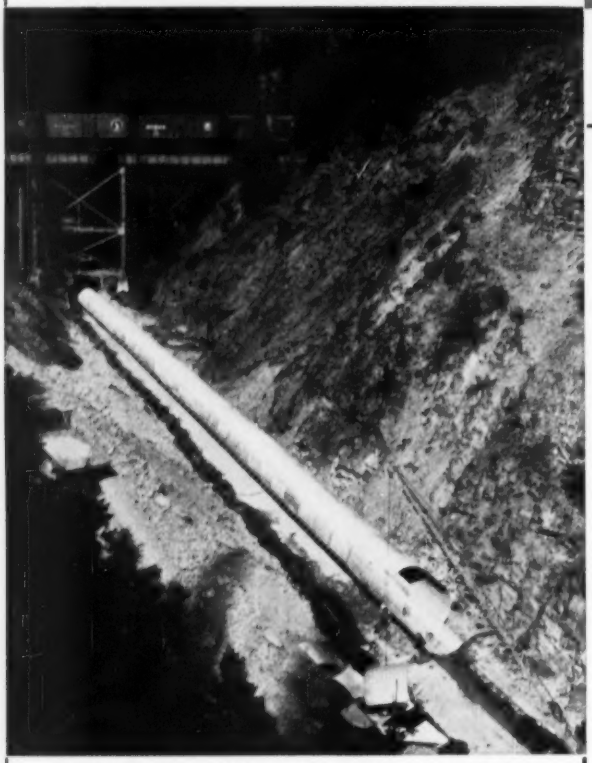
LeTourneau-WESTINGHOUSE Company

Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company

Here's why Armco Drainage Structures will carry your HIGHEST FILLS

Two Armco MULTI-PLATE Pipes carry drainage through Ohio Turnpike's highest fill—108 ft. J. E. Greiner Co., Engineers; Howard, Needles, Tammen & Bergendoff, Contracting Engineers.



Fill height on this 102-inch structure will average 125 feet when completed. The installation is part of a realignment project on U. S. Route 2, Montana.

Modern highway construction calls for deep cut and high fill sections that were unheard of a few years ago. And the problem of drainage under these heavy fill loads is being solved more and more by durable Armco Corrugated Metal Structures. Here are some of the reasons why!

CORRUGATED METAL STRENGTH:

Armco Drainage Structures have the ability to flex under load and gain side support from the adjacent soil. The wide range of gages makes it easy to specify the strength you need.

STRONG JOINTS:

Bolted coupling bands make joints strong and tight. Soil movement or frost action won't disjoint the long pipe sections. Alignment stays good. With Armco MULTI-PLATE (large size structures that are assembled in the field from corrugated plates) the all-bolted construction makes one integral structure.

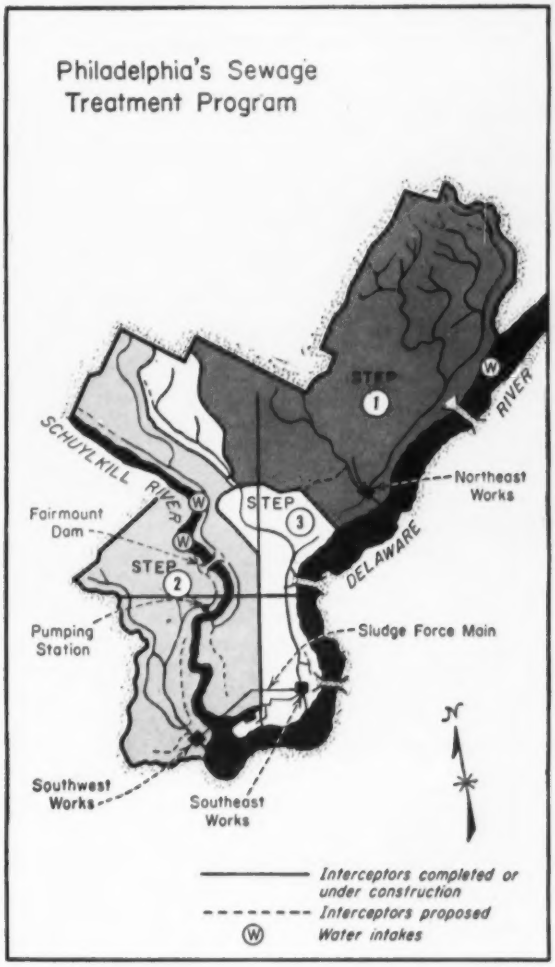
WITHSTANDS FOUNDATION SETTLEMENT:

With Armco Structures you can anticipate foundation settlement with a cambered design. The center portion is installed higher than the desired final flow line. As the foundation settles, the pipe adjusts to proper grade without affecting the joint strength.

Write us for complete, authoritative data on Armco Corrugated Metal Drainage Structures. There is a size and type for almost any job. Armco Drainage & Metal Products, Inc., 3056 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

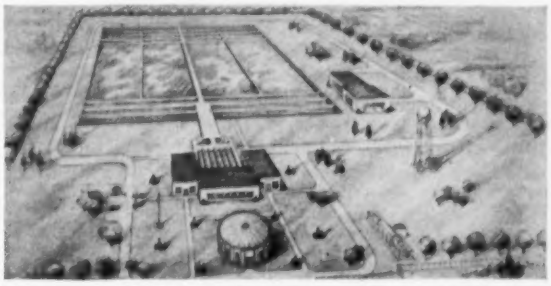
ARMCO Drainage Structures

ARMCO®



Northeast (1) Complete treatment safeguards city's water supply. Abandoned Imhoff tanks are at upper right.

Southwest (2) Designed for primary treatment initially, this one can be expanded to secondary when required.



Southeast (3) Last of the three new plants, raw sludge from this one is pumped to Southwest for digestion.

Three Strikes Against Water Pollution

Dedication of Philadelphia's Southeast Treatment Plant on December 30th wound up the third and last major treatment project of a "golden decade" of construction for sewage collection and disposal. More than $63 million of its $80-million has been spent since 1946 in the city's effective campaign for control of stream pollution and removal of health hazard and nuisance.

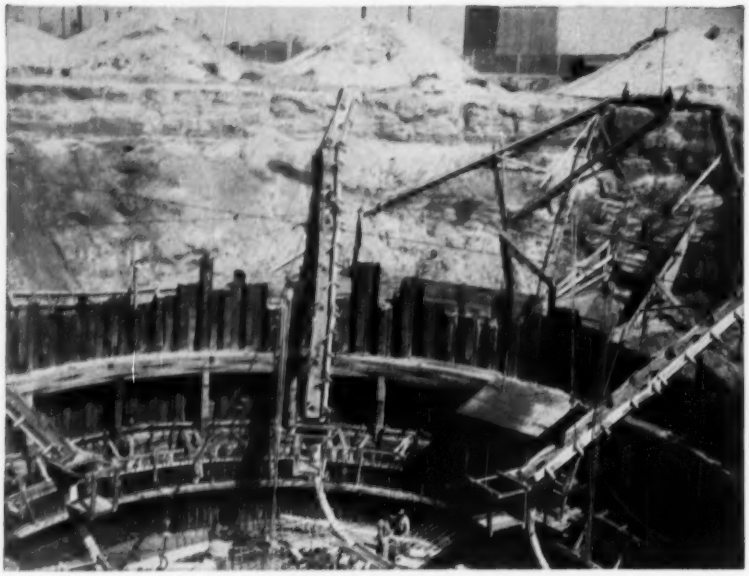
Treatment for a potential 400 mgd and collection for all areas of the city have been provided in less than 10 years, but more remarkable, perhaps, is the fact that eleven years ago the city could not have built a doghouse on what remained of its borrowing capacity for sanitary works. There had been a workable plan in existence since 1915, but no means had been found to execute it fully.

Philadelphia's first attempts at providing treatment were ineffectual. After a one-year operation of an experimental sewage treatment plant—known as the Spring Garden experiment—the city's first treatment plant was placed in operation in 1912. But the first moderately effective treatment project was started under the 1915 plan just prior to U. S. entry into World War I. Due to material shortages and inflation of the day, however, the plant was not completed until 1923.

After completion of this limited-capacity (60-mgd) Imhoff plant, serving the Northeastern portion of the city, money slated for sewage treatment was insufficient. The program defaulted. Depression years resulted in a drastic reduction in borrowing capacity—capital value of the city facilities were exceeded by the amount of the bonds sold—so by the 1930's the city plan was hamstrung. But pollution of the Delaware and Schuylkill Rivers and contributory streams continued to increase alarmingly.

• **Sewer rentals provide answer**—Among the first large cities to adopt financing through sewer rentals, Philadelphia saw this as the solution to its unbearable pollution problem, since a completely self-supporting system is not bound by the municipal debt limit. Sewer rentals were placed in effect in 1946 under a court ruling that not only new sewage treatment and collection facilities be self-supporting, but that all existing phases of the system be included on the same basis.

Urgency born of increased danger of contamination of Philadelphia's main water source (Torresdale Water Treatment Plant a few miles up the Delaware River from the existing



REINFORCED CONCRETE PUMPING STATION at Southeast lifts sewage from low-level trunk sewers to six high plant-level, slightly aerated influent channels.

Northeast plant site) pushed the program to an early start in May, 1947. Slugs of industrial waste had been recorded at the water plant, and the critical condition resulted in design of an entirely new treatment plant at the site of the old one. Fortunately, the original comprehensive plan of 1915 needed only slight revision by way of quantities and degree of treatment to be set up as still the best solution according to present and future needs.

• Step I
Northeast Plant

The new Northeast plant, in operation by 1951, is a modified activated sludge system of treatment that replaced the older Imhoff plant. The outmoded tanks were abandoned and the new facilities were constructed at a cost of $10 million with rehabilitation of only the pumping station, administration building, and some minor facilities that could be used under the new design. The first of three plants under the program, Northeast is the only one designed for immediate secondary treatment. Due to its location, it was important that 75% removal of suspended solids and 75% BOD removal be achieved to safeguard the Torresdale intake.

Now operating at a rate of 110 mgd, the plant is equipped to handle treatment to 1970, when an estimated 876,000 population will contribute 125 mgd, according to designers. The design work was done in the old Bureau of Engineering, surveys and zoning in the Dept of Public Works. Most of the staff is now part of the design staff of the Water Department. The plant provides primary sedimentation, aeration (⅜ cu ft/gal), final settlement, sludge heating and digestion. The site provides space for four digested sludge lagoons that will serve the plant for at least another year. After lagoon capacity is reached, an incinerator will be constructed. Appropriation has been made for $2.6-million in 1956 for the sludge burning facility.

The interceptor system that served the original plant has been expanded to four interceptors that extend deep into northern reaches of the city so that all raw sewage outfalls from the northeastern area are at last cut off before emptying into streams and rivers.

Enlargement and extension of the Northeast interceptor system, some of which was an air tunnel operation, is almost completed at a cost of $8.5 million.

• Step II
Southwest Plant

Construction on the second of the city's treatment projects commenced in June, 1949, before the Northeast plant went into operation. This $11.5-million plant project, which includes force mains, river siphon and two pumping stations, also was designed for modified activated sludge treatment. But at present it provides only primary phases with pre-aeration to a moderate degree to facilitate floc forming and grease flotation.

Treatment consists of mechanically cleaned bar screening, grit collection, flocculation (with aeration) and primary settling. Primary sludge is pumped to storage facilities where it is heated to 100 F by direct inoculation of methane from digesters. The heated raw sludge is then pumped to one of eight digesters that were designed with floating covers and facilities for gas recirculation. The methane from the digesters is also used for heating the various buildings of the plant.

Primary purpose of this plant is the cleanup of the Schuylkill River and its tributaries, and with its location at the juncture of the Schuylkill and the Delaware, dilution is in great enough degree so that 50% solids and BOD removal was considered adequate for the present river use at the point of discharge. Now operating at a rate of 45 mgd, the plant can be readily expanded to complete treatment of 136 mgd. With completion of installation of two interceptor links now under construction, flow to the plant will be increased during 1956 to 100 mgd.

Occupying a corner of a large 1,028-acre tract, the $8-million plant has ample space, not only for future expansion and improvement of facilities, but sludge drying beds for the life of the plant as well.

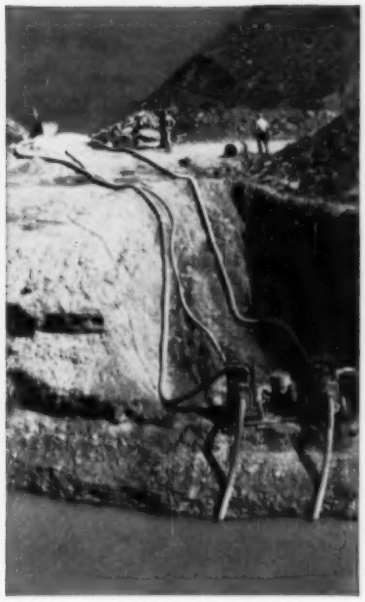
The Southwest plant serves most of the western portion of Philadelphia and portions of adjacent townships, an area that at the time it was placed in operation in December, 1954, contained 870,000 people. By 1970, an estimated 1,200,000 population will contribute a daily flow of 136 mgd.

The area served by the plant—56.3 sq mi—contains the oldest operating interceptor in the city system. Constructed in 1883 along the eastern bank of the Schuylkill River, it is almost seven miles in length and carries sewage from northwestern Philadelphia to a point below Fairmount Dam, an old structure that was built to provide a storage reservoir with two intakes that furnish water for the area. This old interceptor is scheduled for reconstruction in the future.

The Southwest interceptor system, the expansion of which accounts for $15.5-million, also contains the only main river crossing in the Philadelphia program. This is an inverted syphon 75 ft below the river connecting the East interceptor with the Central Schuylkill Pumping Station. The station lifts sewage into the West interceptor from which it is conveyed to the main West Philadelphia Gravity Interceptor Sewer, entering the plant through a major lift station.

One feature of the Southwest plant

DEWATERING COFFERDAM BELOW CUT-OFF POINT of timber piles for Wilmington River bridge piers on US 80, outside Savannah, Ga. After piles were driven to refusal, 8′ concrete tremie seal was poured. These two Jaeger 4″ pumps then unwatered cofferdam again for placement of 4′ reinforced concrete distribution block. Bridge has 14 of these twin-shaft piers. McMeekin Construction Co., Cheraw, S. C.



24-HOUR-A-DAY PUMPING for approximately 9 months each year for the past 3 years, demonstrates the dependability of this pair of Jaeger 6″ Sure-Prime Pumps. Aughenbaugh Coal Co. strip mine, Curwansville, Pa.

IN EXCAVATION for new Southdale Shopping Center, near Minneapolis, Minn., Johnson, Drake & Piper used this Jaeger 3P to pump inflow from spring into sewer line.

DIESEL POWERED 6″ PUMPS deliver rated 90,000 gph at efficient diesel engine speed of 1450 rpm. Ideal for continuous pumping of long ditches draining sand below Lake Erie water level for Erie, Pa., sewage disposal plant addition. Rust Engineering Co., Pittsburgh, Pa.

They bet their shirts on Jaeger Pumps

There are good reasons why such a high percentage of experienced contractors use Jaeger Sure-Prime pumps on their work. Size for size, your Jaeger Sure-Prime has a larger shell and impeller so that it holds more priming water and is subject to less concentrated wear. Its engine is of the highest horsepower applicable. You gain the advantage of two independent, simultaneous priming actions for fast, sure priming, and you prime and pump at slower, longer-life engine speeds. Some pumps run at 2000 rpm to do what a Jaeger does at 1400. This high efficiency is maintained by positively lubricated "Lubri-Seal" — the only pump seal that is provided with a ready-inspection port.

For 4000 to 240,000 gph capacities — or pressures to 275 psi — there's a Jaeger pump built to do your job. See your Jaeger distributor, or send for Catalog P4.

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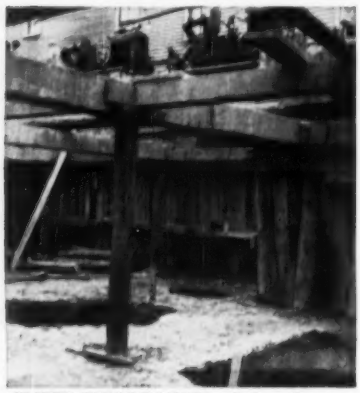
HOW TO HANDLE
WET JOBS

ADDITION TO
TELEPHONE BUILDING

Newport News, Va.

Contractor: Wise Contracting Co.

BOTTOM VERY UNSTABLE. Open pumping caused sheeting to collapse. View shows job shut down after second attempt to sheet hole.



WITH WELLPOINTS. Job is bone-dry, bottom firm and stable—Griffin Wellpoint system (see pumps, top of photo) holding ground water 3 ft below subgrade.

TIGHT FINE SAND with silty clay binder . . . precarious jetting conditions . . . "pinched-in" working space . . . these were only some of the problems. Griffin skills solved them all, speedily and economically.

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WELLPOINT CORP.
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In Canada: Construction Equipment Co., Ltd.
Toronto Montreal Halifax

that proves that city officials have their romantic side is the existence of a pre-Revolutionary brick farmhouse that squats among the buildings of the Southwest Plant. While battles seesawed back and forth across the Delaware River during crucial days of the country's war for independence, the little house somehow was caught in the middle. It still shows the marks of cannonballs that bounced off its walls, and has therefore become known as the "historic cannonball farmhouse". When planning for the treatment plant threatened its destruction, historic groups and city officials got together and integrated the old structure into the final scheme of the plant. When all grading and landscaping has been accomplished, the old landmark is assured an attractive setting among the sedimentation tanks, heater building, and digesters.

• Step III
Southeast Works

Started in November, 1948, the third treatment plant of the Philadelphia program will complete treatment of all city sewage as soon as the intercepting sewer links and chambers, now under construction and design, are placed in operation. Though the $7-million plant serves an area of only 20.7 sq mi, present population is a dense 677,000 persons, and 1970 estimates are for 1,059,000 producing 136 mgd. It, like Southwest, is providing primary treatment with expansion to complete treatment as a design feature.

Sewage from the interceptor system is collected at a lift station as it enters the plant, and is pumped by six vertical centrifugal raw sewage pumps (41-ft head), each with a rated capacity of 45 mgd. There are six mechanically cleaned bar screens, six grit channels, four flocculation channels, two slightly aerated influent channels, four primary tanks and pumps for handling undigested sludge.

Raw sludge is pumped from hoppers at the Southeast plant through an 8-in. force main, approximately five miles to Southwest, where it is digested and lagooned. The crossing near the mouth of the Schuylkill River was accomplished in the early days of the Southwest Works construction program and capped, so all that was required under the Southeast schedule was construction of the force main to the eastern bank of the river and connection to the existing river crossing facility.

Substantially completed is the main interceptor feeder, an air-tunnel job that parallels the bustling Delaware River waterfront for about eight miles. The 13-ft-dia conduit has presented a difficult construction problem from its planning stages, with big intercepting chambers proving a challenge to contractors building them. All are tidal and carry great quantities of sewage and industrial wastes that must be bypassed to the river during construction operations.

The interceptor follows a route under the main waterfront street—Delaware Avenue—through much of its length, but so many old piles and parts of wharf structures, long since built over, were encountered that the tunnel had to be re-routed to a back street in the older waterfront section.

Master-mind of the big program, concerned with all its phases through financing, planning, design and construction, is the city's water commissioner, Samuel S. Baxter, who was chief engineer of Philadelphia's old Bureau of Engineering, Surveys and Zoning, now heads the City Water Department, which handles all water and sewerage operations, including design and construction supervision of all facilities. Aiding him is Max Barofsky, who was assistant chief engineer of the old bureau and is now Deputy Water Commissioner and Chief Engineer. To these men goes the major credit for a vital program that under current rates is costing the average family only 3½¢ per day to finance and operated.

Interior Secretary Reports On Saline Water Conversion

The annual report by Secretary of the Interior Douglas McKay on his department's saline water conversion program is an optimistic review of progress to date on some 30 current research projects on the problem.

Said Secretary McKay: "Estimates of the probable cost of large-scale conversion of sea water show that it is approaching the maximum existing costs of municipal water in the U.S. and is considerably below those of industrial water, although still several times higher than those of currently used irrigation supplies. At the same time, economical improvement of brackish waters for many irrigation uses . . . is definitely in sight."

The research project continues, and Secretary McKay has this to say of finding to date in his annual report:

- Distillation costs can be lowered.
- Electric and osmotic membranes show noteworthy promise of improved performance and lower water costs.
- Developments in solar distillation are "encouraging."
- Freezing processes under investigation have advantage of low costs.

Looking upstream across the tailrace area, the SMS-Fixed Wheel Intake Gate on Unit #3 can be seen being lowered into position atop the dam.

Two halves of a gate have been assembled and aligned on a 7-inch bar horizontal boring mill. SMS bores wheel axle holes in this manner to assure accurate alignment within close tolerances.

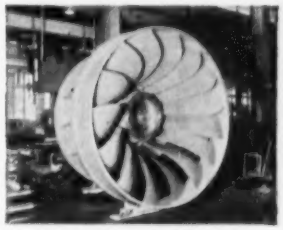
SMS-Francis Turbines At Littleton Development To

GENERATE PEAK POWER

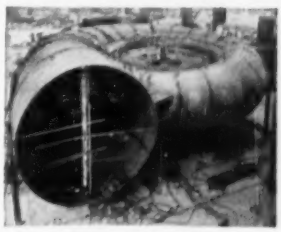
To meet rapidly increasing demands within the New England Electric System's area, Moore Station near Littleton, New Hampshire, will soon go on the line delivering peak load power. Rated at 150,000 kw, this new hydro plant is the third and last on the Fifteen Mile Falls stretch of the Connecticut River. Including the Comerford and McIndoes Stations immediately downstream, this will give a total capacity of 310,000 kw in a river fall of 367 feet at this location. Thus the largest of New England's rivers becomes one of the most highly developed streams of its size.

All three of the Fifteen Mile Falls plants are powered by SMS turbines. The four Littleton units are the vertical Francis type, each rated at 56,400 HP under a 150-foot head. SMS also provided four 18-foot x 24-foot fixed wheel intake gates for operation with an 84-foot head on the sill of the gate frame. The gates are designed for closing under full discharge and opening under balanced hydraulic conditions.

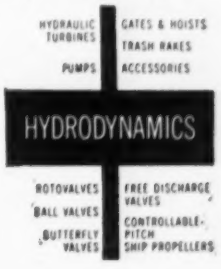
These three plants, with both SMS-Francis and Kaplan turbines as well as accessories, illustrate S. Morgan Smith's ability to handle the needs of any hydro project. Over three quarters of a century's experience in hydraulic design and manufacture stand behind SMS equipment. For full information, write S. Morgan Smith Company, York, Pennsylvania.



Unit #3's runner, completed and ready for shipment.



The 198-inch diameter riveted plate steel spiral case (with riveted cover plates) for Unit #1, taken during assembly at SMS Plant #2.



S. MORGAN SMITH

AFFILIATE: S. MORGAN SMITH, CANADA, LIMITED, TORONTO

PRODUCTION REPORTS FROM THE

GOOD PERFORMANCE IN STICKY GOING. On Grass River lock and dike construction job, important part of immense St. Lawrence Seaway project, a 286 HP CAT® D9 Tractor push-loads a DW21-No. 21 Scraper. In the background, a Marion dragline with 4-yard bucket, powered by a D375 Engine, loads a DW21 with Movall. Says D. J. Dutcher, Vice President of Dutcher Construction Corp., Queenstown, Md.: "Our D9s are performing very well. We're also proud of the performance of our DW21s and Movalls in this sticky material. The high power of the DW21s is very useful here."

DEPENDABLE POWER DAY AFTER DAY. A Bucyrus-Erie backhoe, powered by a Caterpillar D13000 Engine, digs a reclaim tunnel in the construction of Long Sault Dam, a part of a combined U. S.-Canadian hydroelectric project. Contractor: Walsh, Perini, Morrison, Kiewit, Utah Companies, Massena, N. Y. Jess Fulton, who has been operating earthmoving equipment for 46 years, says: "They don't make 'em any better than Caterpillar, I know—I've tried the others. When I sit down on a machine, I like to have that dependable Caterpillar power behind me."

EXCEPTIONAL PRODUCTION. On a section of Robinson Bay Tunnel Road, a big Caterpillar D8 Tractor-No. 8S Bulldozer unit helps construct two miles of 24' blacktop with a 24" base. The contractor here is S. J. Groves and Sons Co., Minneapolis, Minn. Grading Superintendent Jack Conway, a construction veteran of 34 years, has this to report: "Our Caterpillar equipment has run eight weeks with only four hours of down time. That's exceptional because of the adverse conditions here. You just can't beat Caterpillar equipment no matter what conditions are."

ST. LAWRENCE SEAWAY

Contractors, Project Managers, Superintendents and Operators Appraise Caterpillar Performance on Continent's Greatest Construction Project

Here are a few of many firsthand reports on the performance of hundreds of Caterpillar units working on the St. Lawrence Seaway project. These reports cover rugged yellow equipment across the board, from tractors and scrapers to motor graders and engines in earthmoving machinery. And they all add up to this: *Whenever* and *wherever* you have a job to do, you can count on *any* Caterpillar unit to come through for you with money-making production. You can also count on your nearby Caterpillar Dealer to back you with prompt on-the-job service.

To meet your needs, Caterpillar offers you an array of new products developed to work longer and more profitably than any other equipment on the market. For complete information about them, see your Caterpillar Dealer. Name the date—he'll be glad to demonstrate!

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

USE CAT EQUIPMENT FOR MONEY-MAKING PRODUCTION

MINIMUM MAINTENANCE AND MINIMUM DOWN TIME. Building a dike at Victoria Bridge and Jacques Cartier Bridge, a Cat DW21 Tractor with an Athey PR21 Wagon hauls rock, while a D8 Tractor-No. 8S Bulldozer handles the 'dozing job. The contractor is McNamara-Pigott-Peacock-McQuigge of Montreal, Canada. Project Manager M. L. Sproule, 35 years a construction man, says: "We get good production with a minimum of maintenance and down time from Caterpillar units—and I'd say that our Caterpillar Dealer's service is the tops."

STAYS ON THE JOB. A Cat No. 12 Motor Grader is kept busy building access roads to the St. Lawrence Seaway project near Massena, N. Y. The contractor: Torrington Construction Co., Inc., Torrington, Conn. Superintendent Theron Jenson says: "You will have to go a long way to get machines that will outperform and stay on the job for you as do Caterpillar Diesel Motor Graders and Tractors."

This "OGRE" can ruin a hot underground piping system that is turned on and off!
Let's look beyond just the initial cost of installing an underground piping system!
Consider for a moment how this system, once installed, will react to the thermal shock of turning it on and off (and what system isn't turned on and off occasionally). Unless the system is inherently capable of withstanding the shock of on and off service . . . that's when the "Ogre of Corrosion" swiftly becomes a real threat . . . and it costs you money!
Ask your Ric-wiL representative to explain how a Ric-wiL system protects you against on and off thermal shock.
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Representatives in Principal Cities

STEEL RIBS were tilted up in pairs to rest on center ring girder. One crane lifted the ribs, the other braced the ring.

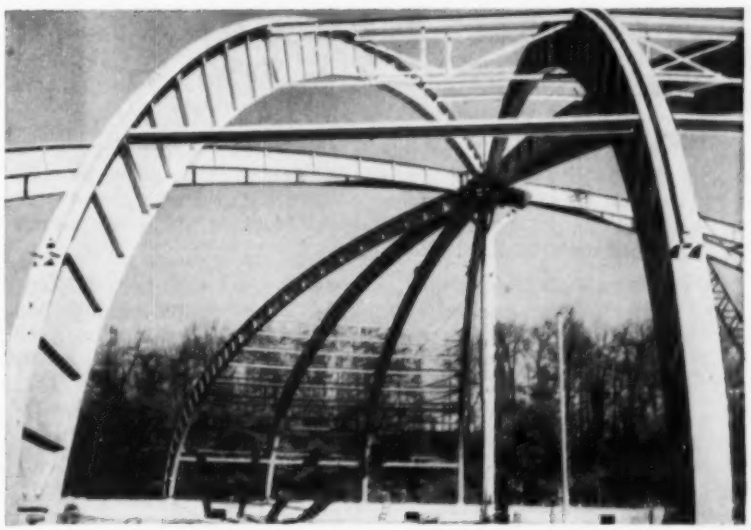
Tilt-Up Ribs Speed Dome Erection

A 270-ft dia steel-ribbed dome is going up at a fast rate on the Georgia Institute of Technology campus, Atlanta, Ga. Key factor was the speedy erection of 32 steel ribs that support the curved roof.

An ellipse of revolution, the dome will roof the basketball arena of the school's $1.5-million Alexander Memorial Center.

The elliptical ribs are built-up welded girders spanning 130 ft from hinged foundations to a 10-ft dia circular girder at the crown. Each rib is composed of a web plate and two flange plates, with bulb tees for stiffeners. Depth varies form 3 ft at foundation and crown, to 4½ ft at the deepest section.

The base plate at each arch is anchored with four 2-in. steel anchor bolts. Two reinforced channels placed back-to-back on the base plate support a 3¾-in.-dia steel pin that in turn supports the arch.



ARCHED PLATE GIRDERS with bulb-tee stiffeners were supported by a column at the crown during erection.

Each rib arrived at the site in two sections, which were welded together on the ground. Prior to erection, the ribs were tied together in pairs with trussed bracing.

First step in erection was to raise the lantern girder to its final position and support it temporarily on a steel column. Then, ribs in pairs were tilted up about the hinged supports by a crane and attached to the ring girder. A second crane steadied the girder against unbalanced loading.

Next, steel bulb tees at 33-in. intervals were welded to steel purlins spaced 8 ft c-c. Wood-chip concrete boards, 31 x 96 in., will be laid on the bulb tees and topped with a 40-lb roofing. Along the top flange of each rib

If the Job Calls for VENTILATING . . .

Actual photo during exhausting of explosion gases.

. . . Your best bet is NAYLOR PIPE

When you consider ventilating lines, Naylor Spiralweld pipe stands out in two basic ways.

From a structural standpoint, the Naylor spiral truss adds extra safety and collapse strength for both pressure and vacuum service. Its exclusive structure permits the use of lighter gauge material for lower cost without sacrificing performance.

From an installation aspect, when connected with the one-piece Naylor Wedge-Lock coupling, Naylor lines can be installed faster than by any other method. With this combination, lines hug the wall and space is saved as they can be made up with only one side of the pipe in the open. And its light weight makes Naylor pipe easy to handle and extend as work progresses. Sizes from 4" to 30" in diameter and uniform lengths to 40 feet.

Write for Bulletins No. 507 and No. 514 for complete details.

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. . . Tilt-up ribs

is a thin wood strip that will serve as a nailing strip at joints in the metal roofing. The wood strip also serves as a stop for the standing seams of the roofing.

Around the perimeter of the building will be a 7-ft-high brick wall with a 2½-ft-high strip of windows above. Entrance to the arena at ground level will be through 26 pairs of doors from an encircling paved walk.

Atop the main arena, over the center ring, will be a 38-ft-dia cupola of ribbed-dome construction. It will house ventilating fans and floodlights.

Inside the structure, the concrete seating bank will begin at entrance level and incline down 24 ft to the playing floor. On one side of the playing court 1,452 stadium chairs will be installed on the concrete bank. On the remaining concrete bank areas, permanent wood benches will be installed for a permanent seating of 7,000. And, on the playing floor itself, approximately 1,700 chairs can be placed.

Aeck Associates, Atlanta, are the architects and Mion Construction Co., also of Atlanta, is the builder. Engineers are Morris, Boehmig & Tindel (structural), D. F. Lindstorm & Associates (mechanical), and Charles F. Howe (electrical)—all of Atlanta.

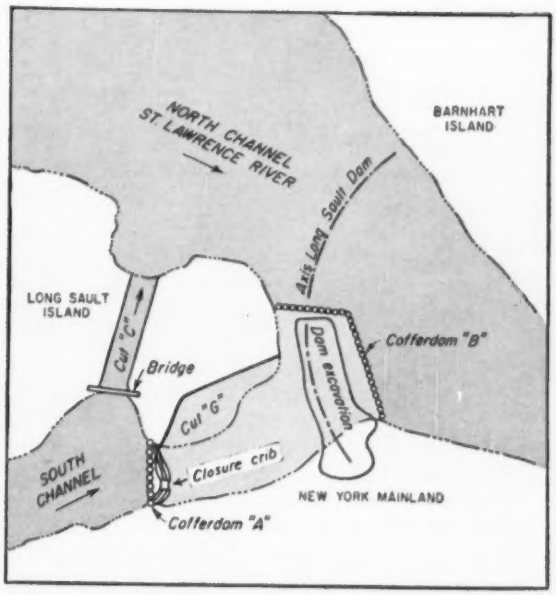
Road Department Proposes Engineer Scholarship Plan

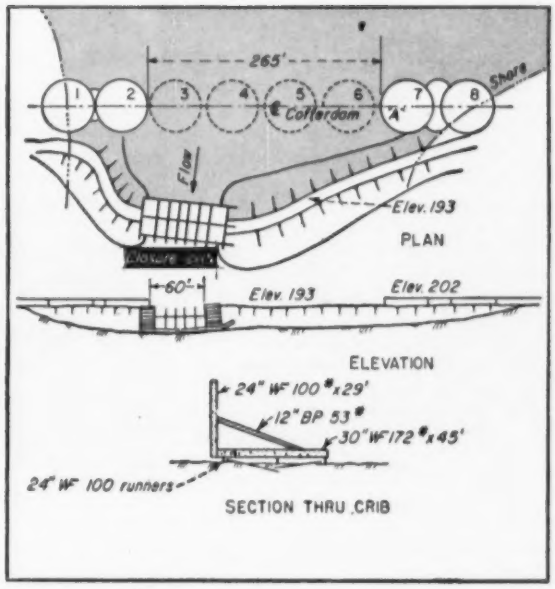
North Carolina's Highway Commission—faced with an acute shortage of graduate engineers—is thinking of setting up engineering scholarships for outstanding high school graduates.

The recommendation was put before a special committee named by Gov. Luther Hodges to study highway department needs. Under the plan, high school graduates would work for the commission during the summer as well as serve a period with it after receiving their degrees.

In addition to the scholarship program, Highway Chairman A. H. Graham proposed an "in-service training program" with correspondence courses and night schools "to improve the usefulness" of non-degree engineers to the commission. He said that only about one-third of the 444 men the commission now classifies as engineers are college graduates.

Chief Engineer W. H. Rogers, Jr., pointed out to the committee that North Carolina State College will graduate only about 200 civil engineers this year. About 50 of them will go into military service as reservists. The rest will have a pick of about 250 job offers.





How to plug a fast-flowing river like the St. Lawrence

The trick was to stop flow in the south channel sufficiently to create "still" water in which to drive cells of Cofferdam A. End-dumped dike did the trick, but it took a unique closure crib at its center with steel caging to hold the dumped rock.

A Crib-Sled Nicely Does the Trick

E. L. Weidner
Dravo Corporation
Pittsburgh, Pa.

Plugging the south channel of the St. Lawrence River, where it races around Long Sault Island, called for a unique rock-filled timber crib and sled arrangement, to cut off flow and permit construction of a conventional steel sheetpile cellular cofferdam.

The operation was part of the first major construction contract awarded on the St. Lawrence power project by the Power Authority of the State of New York. It was completed last winter under just about the worst conditions imaginable to make possible excavation for the first half of Long Sault Dam, a control structure for the power project (ENR Nov. 3, 1955, p. 34). From the start it was a battle against rain, mud, record-highwater, sub-zero temperatures and a tight schedule.

Long Sault Dam is located where the St. Lawrence is split into two channels by Long Sault Island. The main channel, flowing around the north side of the island, is famous Long Sault Rapids. The Little Sault, or South Channel is smaller but it also carries a sizeable flow.

The plan was to block the South Channel with Cofferdam A (the upstream cofferdam) and divert its flow through a cut across the Long Sault Island into the main stream. Cofferdam B, from the tip of Long Sault Island to the mainland then would enclose the lower end of a 25-acre area where the first part of the Long Sault Dam is now being built.

Dravo's schedule:

(1) Excavate the diversion cut across the island except for earth plugs at both ends. This cut, 1600-ft long by 230-ft across, required some 250,000 cu yd of excavation. (2) Build a 430-ft access bridge across the cut on steel sheetpile cells. (3) Remove the earth plugs from the cut. (4) Build eight cells to form Cofferdam A. This operation included the difficult diversion of the South Channel. (5) Build Cofferdam B. The final stages were dewatering and excavating.

While the diversion cut was being excavated, four cells of Cofferdam A were constructed, two adjoining each shoreline. The interlocking steel sheetpile cells (59 ft 8½-in. in diameter) were driven by customary methods with crawler cranes working on earth berms from each shore. These installations narrowed the width of the channel between cells to 265 ft, to cause a velocity of approximately 10 ft per second.

The next job was to close off the opening between the cells so the four remaining cells for Cofferdam A could be placed. It was impossible to build the cells in the raging stream.

Studies indicated that the channel closure would need to be designed for a maximum head differential of 16 ft, a flow of 35,000 cfs and final velocities up to 24 fps. The total design discharge was determined as follows:

Normal maximum river flow	24,000 cfs
Possible increase because of ice conditions in an upstream power canal. Possible increase because of high flow due to wind on Lake Ontario	11,000 cfs allowed
Total	35,000 cfs

High volume flow on the St. Lawrence River is remarkably steady all year long. While ratio of maximum to minimum flow on the Mississippi River is 25 to 1; and on the Columbia, 35 to 1; it is less than 2 to 1 on the St. Lawrence. But during this job, flow reached an 80-year record high.

Before designing the closure method, considerable study was made of the techniques used on other projects in this country and abroad.

- At McNary Dam on the Columbia a cableway was utilized in constructing a weir type closure of 12-ton concrete tetrahedrons with a flow of 80,000 cfs over the closure fill.
- For Davis Dam on the Colorado, rocks up to 2 tons were dumped from a trestle to form a weir type closure,

but emergency measures, including scrap steel and plate, were needed to close the gap.

• An end dump closure, designed for a maximum head differential of 9 ft, was constructed of 1 to 5-ton rocks at Chief Joseph Dam on the Columbia. In the final closure, 15 to 30-ton rocks with cable anchors were required.

• To cut off a flow of 35,000 cu ft per second on Canada's Saguenay River, a huge monolithic concrete dam was built and then tipped into the water by a dynamite blast.

In all of the closure techniques, special methods had to be used to plug the last difficult gap.

On Dravo's St. Lawrence job, it was not practical to build a trestle and dump rock in a weir type closure because of the erratic rock and boulder bottom in the South Channel and because of the threat of ice jams. Rear dump trucks were available. There was no cableway available, so it was decided to use the end dump method.

No large rock could be located in the vicinity of the project. Quarry-run rock, with a small percentage of 2-ton maximum size, was obtainable 18 mi away. For economy, therefore, it was figured that the closure method would have to be suitable for using rock of 2-ton maximum size with very little waste. Here was the method.

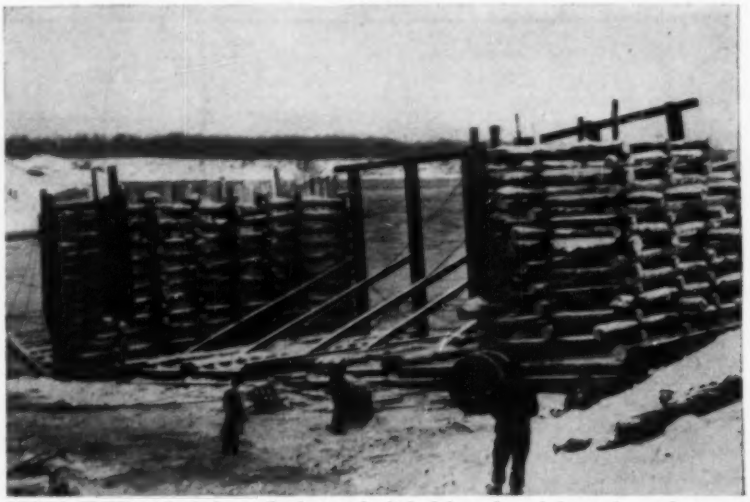
• **The closure tool**—A sled arrangement was fabricated on the mainland shore. The sled was formed by three runners of 24-in. WF 100-lb steel beams. It was 115 ft long by 47 ft wide. The runners were hinged in the middle and bent up at one end so they would travel over the uneven bouldery river bed without snagging.

Six 24-in. WF 100-lb beams 29 ft long were heavily bolted upright and braced to the runners. These uprights formed guides into which heavy screens could be dropped to hold a rock ballast in the swift stream. Flanges of the upright beams served as slots for the screens.

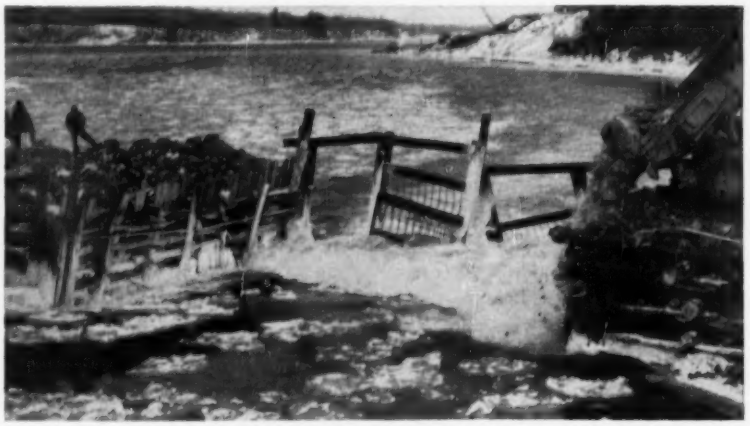
Wooden cribs made of poles cut in the vicinity of the job were built on each end of the sled. The cribs, 19 ft wide, 45 ft long and 24 ft high, were designed to hold approximately 1000 tons of rock to ballast the structure midstream in the fast water. When the cribs were installed on the sled runners, there was a 60-ft wide opening between them. This would make the final closure gap.

Because the bank on the mainland side is steep, the front half of the sled-crib was built first and then moved 50 ft into the river while the rear half was fabricated and attached. It was then that the rugged winter weather really demonstrated its might. The front half of the 230-ton sled froze in the shore ice and yielding fill complicated the problems of pulling the structure into the river. It was finally blasted loose of the ice at the time the pulling strain was applied.

To move the sled-crib, one cable was fastened to each of the three 24-in. runners. The 1⅜-in. dia middle cable had a breaking strength of 100

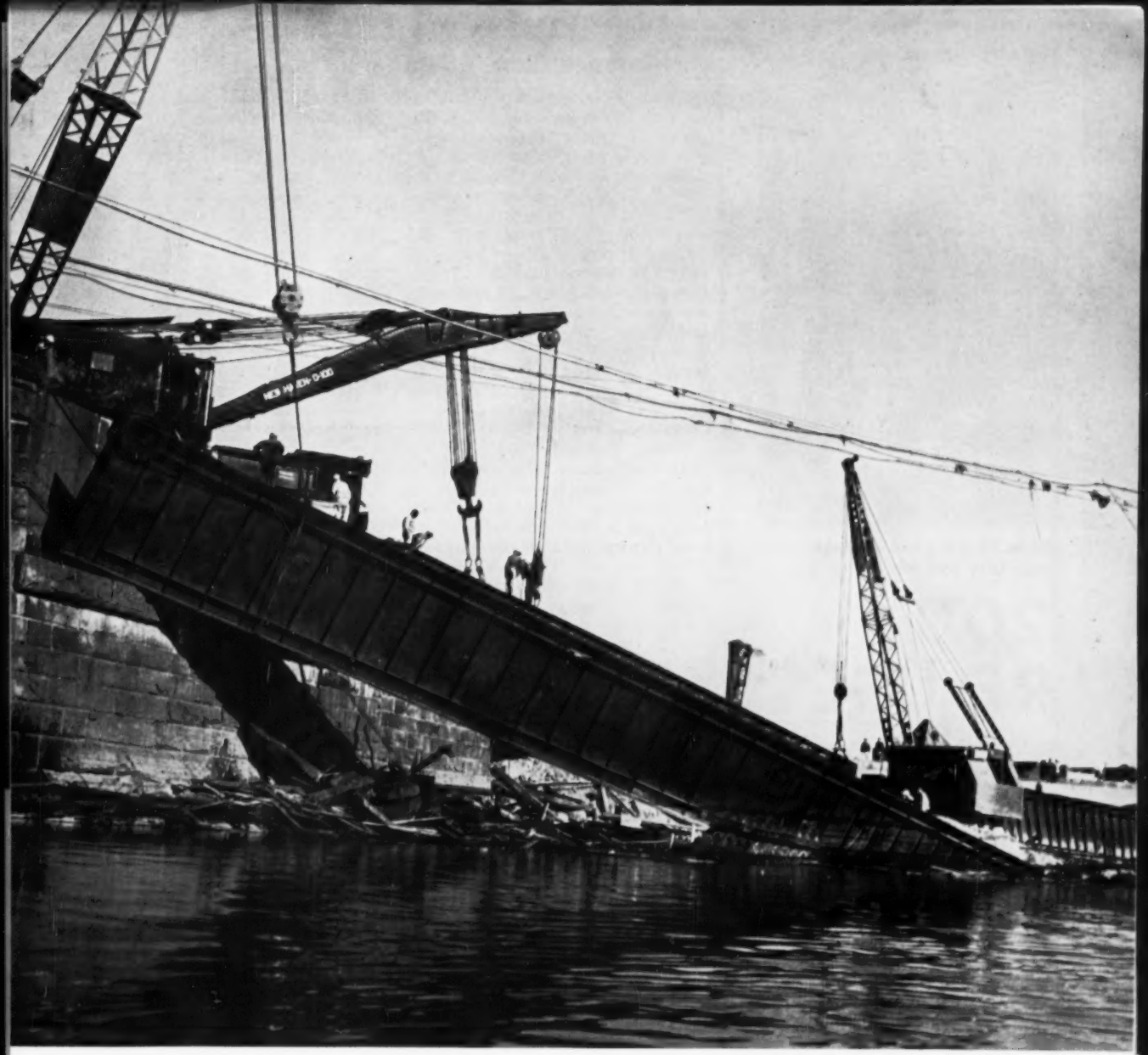


STEEL SLED with timber cribs fore and aft had braced steel frame for rock cage at downstream side. The sled was easily pulled to midstream.



WITH CLOSURE SCREENS in place, rock dumped into last 60-ft gap makes short work of closing off raging river channel.

QUIET POOL behind completed dike made pile-driving possible as flow passed under bridge and through diversion channel.



Wire Rope at Work—When Hurricane Diane loosed one of the most destructive floods in history, scenes like this were common. The angry torrents swept parts of Pennsylvania, New Jersey, New York, and New England, taking a staggering toll of lives and property. Bridges like the one above, in western Connecticut, were playthings of the raging waters.

Prior to the disaster, this bridge spanned the Naugatuck River. To salvage what was left after the flood, the Foundation Company was summoned from New York, and its hard-working crews and equipment were soon on the job. An emergency shipment of Bethlehem wire rope, ordered by telephone, was rushed to the site of operations; hustled into service. It had the muscle for the tremendous lifts involved, and in no time at all, the work of moving the wreckage was underway.

Bethlehem Steel Company, Bethlehem, Pa. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

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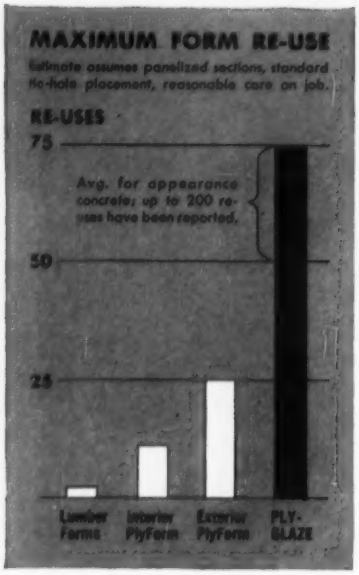

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. . . Cribsled Closes the River

tons, while the other two were 1¼-in. dia with 90-ton breaking load. Eighty percent of these breaking strengths provided a safety factor of two for sliding the crib-sled, provided the three pulls could be about equalized.

Each cable was carried across to the island where diesel cranes were used for power through sets of blocks attached to 100-ton deadmen. Lateral drift of the sled-drift in the swift water was controlled by a 1¼-in. dia cable leading upstream from the forward corner through a set of blocks to a bulldozer. A drag cable also was attached at the rear to prevent the structure from sliding too fast down the icy riverbank.

Pulling the sled 150-ft over the rocky river bottom to its design location in the deepest section was an easy operation. When the crib was positioned, a fill of rocks was dumped from the mainland to the landward crib on the sled. This crib then was filled with rock and a crawler crane used it as a base to reach across and fill the other crib. Cables were removed and work began on a dike between Cell 8 and the crib on the island side of the sled. Rock previously had been ferried across the channel and stockpiled.

• **Flow diverted**—The island dike was initially dumped up to El. 184—approximately half way to the crib—allowing some 30,000 cfs to pass before the diversion cut across the island was unplugged. To reduce velocities in the channel and aid dike placement, work was speeded on the diversion cut opening. As originally designed, the bottom elevation of Cut "C" was set at the approximate depth of the South Channel bottom, but an extremely hard bottom would have required extraordinary means for the excavation of this channel to grade. The bottom of the cut was therefore raised about 10 ft higher than the bed of the river. This resulted in some additional head differential in the final closure operation.

To build the first half of the dike from the island, rock up to one ton in size was used. As end-dumping progressed into the second half, the maximum size was increased to 2 tons. The larger rock was dumped on the upstream corner of the fill to deflect solid water and allow the use of smaller material to extend the berm.

One week after the last plug had been removed from the diversion cut, the rock dike reached the crib. To bring the top of the dike to El. 193 and give it ample freeboard for maximum flow, nine feet of pit-run sand and gravel were placed above and upstream of the dike's rock core. This also reduced the permeability of dike.

Final closure was achieved by placing fabricated screens between the uprights on the sled. Screens were made of 12-in. side channels, 12-in. WF beam cross members on 5-ft centers, with vertical ¾-in. diameter rods on 12-in. centers. The screen for the center opening, immediately above the hinge in the sled runner was designed so it would be flexible as to width. Half pieces of M112 sheet pile were used as side members. These interlocked with the other half pieces of piling welded to the vertical beams. Cross members were lengths of ¾-in. steel cable on 12-in. centers. They were spaced by wrapping and stapling them to timber poles.

Placing the rock fill upstream of the screens was an anti-climax. The maximum rock size needed was only 12-in. by 15-in. and it was placed quickly.

After the closure, the remaining four cells of the cofferdam were installed in the still pool formed by the dike.

Pilot Tunnel To Be Built At Site of Shoshone Dam

A pilot tunnel is scheduled to be built this year at the Shoshone Dam site in Wyoming by the U. S. Bureau of Public Roads and the Wyoming Highway Department.

The pilot project would be 8 ft in diameter and 3,200 ft long. It would be used to determine what type of granite formations would be encountered in construction of a traffic tunnel.

The traffic tunnel has been proposed as a by-pass to the so-called steepest section of highway in the U. S. This road crosses the rocky side of North-fork Canyon west of Cody from the creek bottom to the top of the dam. And last year rockslides buried it under tons of earth.

Construction of the traffic tunnel would replace grades of up to 20% on the present steep road with a continuous grade of 6%.

Sandusky Harbor Improvement Studied by Engineer Corps

A four-point program to improve the harbor at Sandusky, Ohio, is being studied by the Corps of Engineers.

Oral and written arguments were submitted for the proposed project at a recent public hearing in Sandusky. Col. Loren W. Olmstead, acting district engineer from the Buffalo, N. Y., office said a report will be submitted to Congress after the Corps has completed its study.

SPECIAL REPORT

On the St. Lawrence Seaway

As of the 15th of October, 1955, 17 Manitowoc Shovels, Draglines and Cranes were taking on the "tough jobs" along the St. Lawrence Seaway Project with many more Manitowocs scheduled to appear soon.

Project contractors have found that Manitowoc simplified design, rugged construction, fast mobility and all-around job versatility pays off in speeded-up work schedules.

Put all of the job-tested Manitowoc advantages to work on <u>your</u> next bid. Contact your Manitowoc distributor for the whole "profit-happy" picture.

MANITOWOC ENGINEERING CORP. MANITOWOC, WIS.

OTHER MANITOWOCS
ON THE SEAWAY PROJECT

American Bridge Division,
U. S. Steel
6 - Manitowoc Model 3500's

Perini, Kiewit, Walsh, Utah,
Morrison-Knudsen Combine
1 - Manitowoc Model 4500

Peter Kiewit & Sons Co.
1 - Manitowoc Model 4500

Kiewit-Johnson & Johnson
2 - Manitowoc Model 3900's
2 - Manitowoc Model 4500's

Morrison-Knudsen Co., Inc.
4 - Manitowoc Model 4500's

Equipped with a 6½-yd. bucket, this 4500 dragline operated by Morrison-Knudsen loads 22 cu. yd. wagons in three passes per unit during preliminary work on diversion, cut "F".

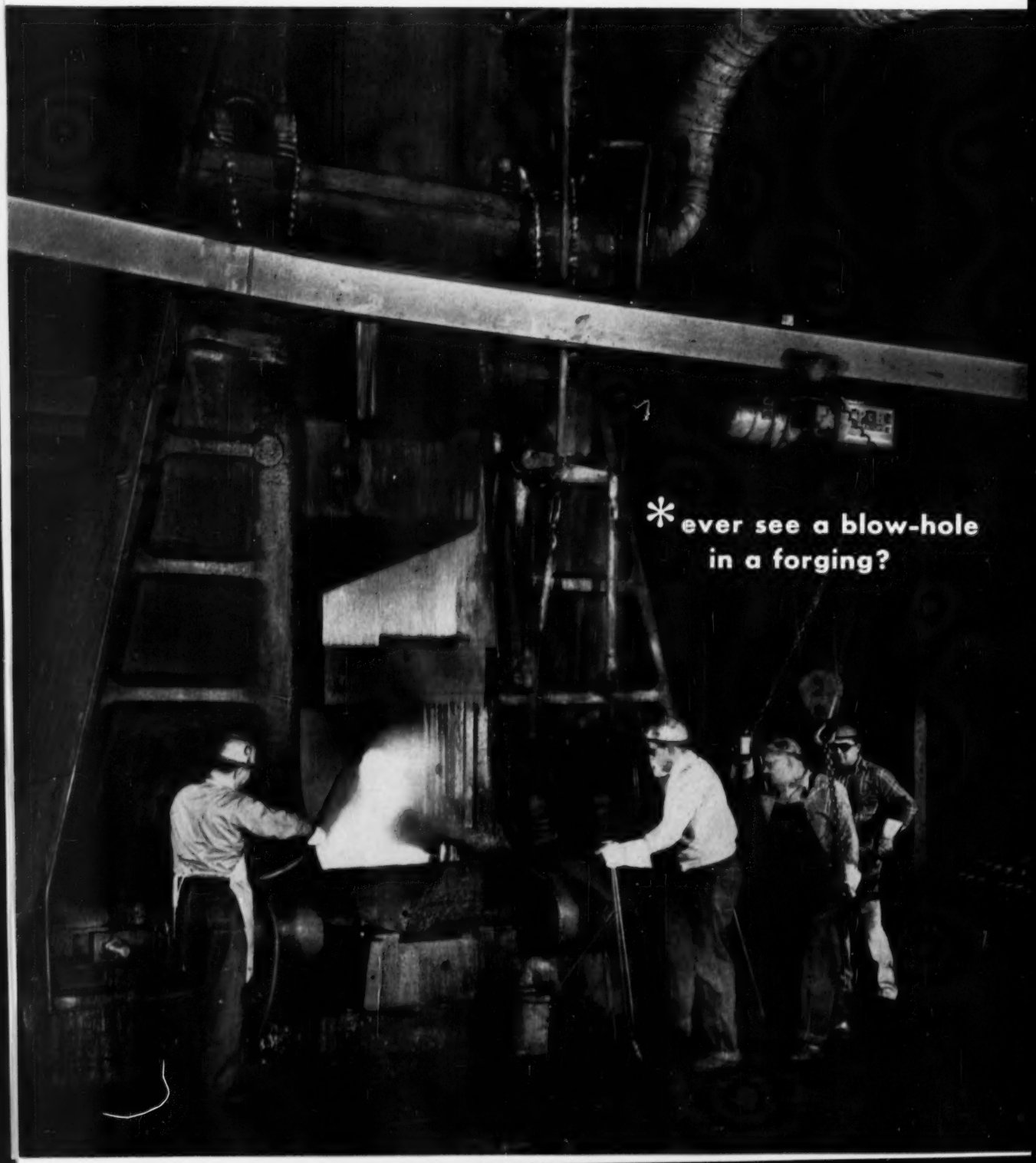
This Manitowoc 5½-yd. Model 4500 shovel is excavating at the site of Barnhart Island powerhouse for the combine of Perini, Kiewit, Walsh, Utah, Morrison-Knudsen.

One of six Manitowoc 60-ton 3500 cranes operated by American Bridge — this unit shown placing steel at site of "permanent bridge".

One of the first machines on the St. Lawrence project, this 2½-yd. Manitowoc Model 3500 is shown excavating at the site of Long Sault Dam. The shovel pictured is owned by Drave Corp.

MANITOWOC
SHOVELS 1-5 YD. Speed Crane CRANES 20-100 TON

don't spare the rod with P&H



power cranes & shovels?

*see why P&H gears have the guts to take it

You never need ask if P&H power cranes and shovels will handle rated capacity. They've got the guts to deliver at capacity day after day.

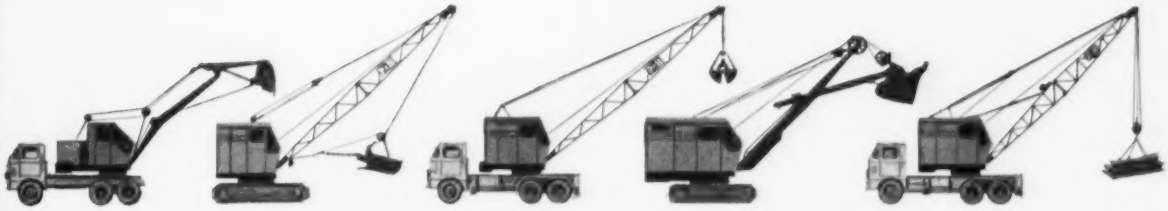
That's why we tossed out castings under critical stress. Replaced them with forged gears. Just like we tossed out castings for uppers and lowers. Replaced them with weldments.

Forged gears help us give you automotive performance in P&H equipment. Cut to a tolerance of 0.001 inch, they're splined to heavy shafts running in antifriction bearings. Line boring of all-welded construction assures perfect alignment. Gears and roller chains in the power box are sealed in an oil bath to minimize friction.

Operators quickly discover the smooth flow of power from motor to dipper or hook. They miss the grind and vibration of old fashioned shovels and cranes.

You'll quickly discover the difference in operating cost. Less down time. Low repair and replacement cost. Even with the toughest digging. That's why we proudly say—don't spare the rod with P&H power cranes and shovels. They've got the guts to take whatever comes their way . . . day after day after day.

No matter how small or how large the job, there's a P&H model to help you make money. Harnischfeger Corporation, Milwaukee 46, Wis.



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Power Crane & Shovel Division

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- uniform strength and toughness
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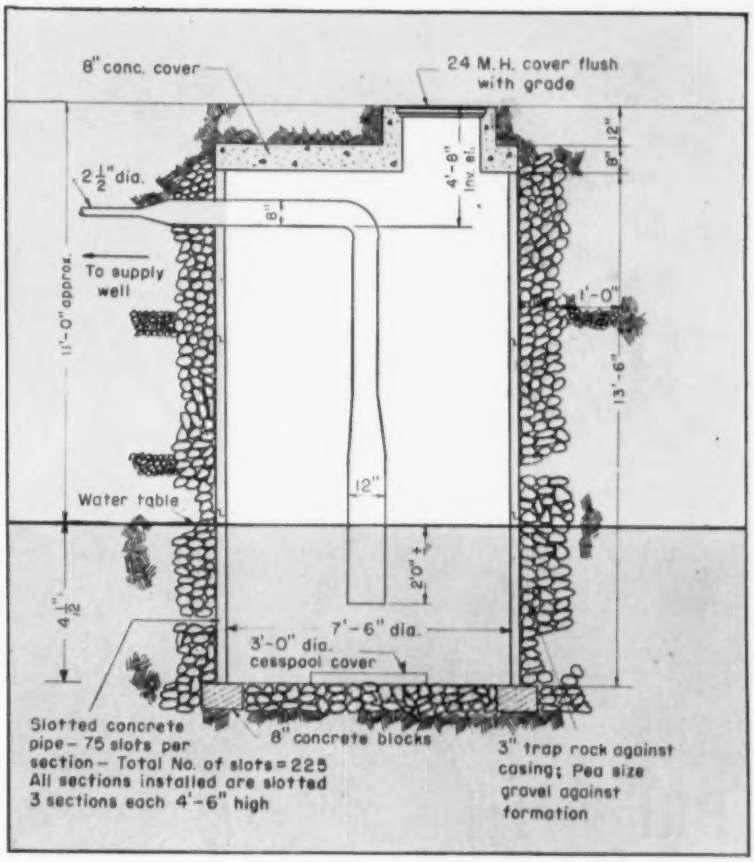

LEECHING TYPE DIFFUSION WELL has been developed to return well water to source in areas where groundwater table is high. Construction is simple once a relatively shallow hole is dewatered. Field tests show that . . .

This Diffusion Well Won't Flood

John F. Hoffman
Assistant Engineer
New York Telephone Company

When the law requires well water to be returned to source and the groundwater table is high enough, the commonly used diffusion well poses a flooding problem. The New York Telephone Co. faced such a situation at its new building in Patchogue, Long Island, where the requirement was to return 52 gpm, and ultimately 260 gpm, of air conditioning cooling water in an area having a water table 11 ft below the surface.

Flooding experience in similar locations with the usual diffusion well, consisting of a well casing about the same size and depth as the supply well but with greater screen length, forced adoption of a new approach at Patchogue—a leeching-type diffusion well which performed admirably under tests.

The area contains stratified fine to medium glacial outwash sand down to 110 ft, underlain by an impermeable formation. Using Hazen's formula relating permeability to characteristic grain size, a permeability of 1,000 gpd per sq ft for the formation was obtained. This figure was then applied in the Thiem formula, which relates drawdown (or build up) of the static water level to permeability of the water-bearing formation and pumping (or recharge) rate, to determine well size and depth. Recognizing the approximations involved in the Hazen formula, the computed buildup was increased arbitrarily by 100%.

• **Critics question design**—Several competent engineers questioned the ability of the new type diffusion well to cope with the design flow rates. The skeptics raised the point that positive pressures had been measured in normal deep diffusion wells and since there was no means of building up pressure in the new well, water could not be "forced" into the formation and would overflow the confines of the well. The answer is simply that pressure is not a requirement for operation, that pressure is created by the inability of the formation to disperse the water rapidly enough, and that by increasing the well wall area to more than ten times the screen area required for the ordinary diffusion well, the head necessary for satisfactory flow to the formation is greatly reduced.

Other factors facilitate operation of the new well. Its large volume and extensive wall area make negligible the effect of any fine sand passed through the supply well screen and deposited in the diffusion well. Entrainment of air in entering water is eliminated by placing the inlet pipe below the water table and installing an air relief valve in the inlet line.

Aside from the flooding advantage, the new diffusion well achieves a greater vertical separation to intake screens of the supply well (in this job 6 in. in dia and 70 ft deep) than the common dry well and thereby reduces undesirable temperature rise due to recirculation of spent cooling water. Maintenance costs for the new-type well are expected to be less than for the ordinary well.

Well construction is indicated in

Sealing Compounds at Work!

PRESSTITE'S *cold applied 3-step sewer joint sealing system*

Prevents Overloading Sewage Disposal Plant

Extensive ground water infiltration can overload planned capacity of the disposal plant, resulting in serious trouble and expense. To prevent this, engineers specified Presstite's 3-step system to seal the recent 17-mile Decatur, Ill., sewer project.

Developed through extensive research, Presstite's economical proven system insures tighter, more dependable joints with three simple steps:

1. Presstite PRIMER . . . painted on bell and spigot ends before laying pipe, provides a better bond.

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the sketch. The inner well wall consists of annular slotted concrete pipe. A 1-ft thick vertical layer of 3-in. trap rock backed by 1 ft of pea gravel stabilizes the formation side wall and prevents movement of material into the well proper. Successive enlargements of the inlet pipe and placement of a cesspool cover beneath the mouth of the inlet reduces the usual scouring action.

Construction was no problem once a 13-ft-dia steel ring was placed in the excavation to form an effective cofferdam. A sump pump effectively dewatered the hole.

• **Water buildup measurements** — Since the proof is in the pudding, pertinent depth to water measurements were taken during a 5-hr diffusion test at the 52-gpm flow rate. At the end of this period water inside the well had risen 1.2 ft above the water table. Although the maximum water-level rise was not reached after this short time, extrapolating the plot of water level rise against the semi-logarithm of time over an entire air conditioning season indicated a maximum water level rise of 1.7 ft. Applying the extrapolation to the ultimate 260-gpm flow rate indicated a build-up of 8.5 ft—the capacity of the well and justifying the 100% safety factor assumed.

In anticipation of algal growth on the gravel pack, copper shavings are to be placed in the well and supplemented, if necessary, by pre- and post-season dosing with chlorine water.

Three Dam Types Considered To Raise Mississippi Water

The Army Corps of Engineers is considering three types of dams, including a movable type, to relieve low-water problems at Alton, Ill. and at points downstream along the Mississippi River. Due to erosion of the river bottom downstream from the Alton locks, barge lines and other users of the river have been forced to lighten their loads at times; the channel becomes less than the required 9-ft depth.

The Corps of Engineers conducted a public hearing in January to obtain opinions on the advisability of construction of a low-water dam in the Chain of Rocks reach on the Mississippi River adjacent to its confluence with the Missouri River just above St. Louis. Cost of one type of dam has been estimated at $10 million. Barge line companies and other users through their representatives at the hearing indicated the users of the river lost $1 million in the period Nov. 20 to Dec. 19 due to low-water conditions at the Alton, Ill., locks.

Michigan Model 175A owned by E. J. Petrillo, Inc., sold and serviced by United Tractor and Equipment Corp., N. Y. C.

On the New York Thruway

This 2¼-yd. Michigan loads out 6-ton oversize blast rock

This photograph shows a section of E. J. Petrillo's contract on the New York Thruway where the contract called for removal of an old granite quarry. Petrillo used one of his 2¼-yd. Michigan Tractor Shovels to load out oversize blast rock. Some of the rock weighed as much as 6½ tons and measured close to 8 ft. wide.

Substitute for 4-yd. crawler

Superintendent Tony Tangredi said that the job normally would have called for a 4-yd. crawler-loader, but the crawler-loader wasn't available. So he decided to try the Michigan, even though he considered this an unusually tough assignment for a rubber-tired machine. During the three weeks the Michigan was on this job, its performance was satisfactory in every way.

Note the size of the stones being loaded into the rear-dump.

Speed on the job

Petrillo's Michigans are always on the move—loading trucks in the borrow pit, handling general clean-up work all over the job. "A big advantage to us is the maneuverability of these Michigans", says Supt. Tangredi. "At 27 mph, they get where they're needed in a hurry —and you don't need trailers to move them. On this rock-handling job, we proved that the Michigans will handle the tough assignments along with the routine jobs."

Handles the tough jobs

Like E. J. Petrillo, Inc., more and more owners have found that a Michigan will handle jobs which have always been considered too tough for rubber-tired Tractor Shovels. The exclusive Clark power-train — torque converter, power-shift transmission and planetary wheel drive axles—gives the Michigan more useable power and traction than you've ever seen on this type of machine. Your Michigan distributor would like the chance to prove it. Ask him to demonstrate on one of *your* tough jobs —you name it.

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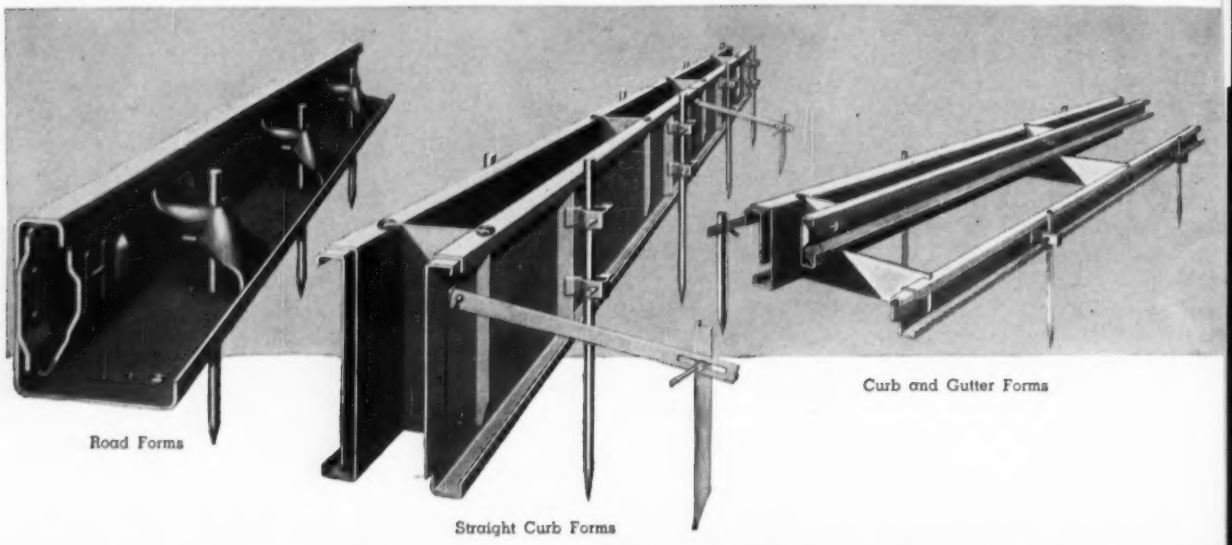
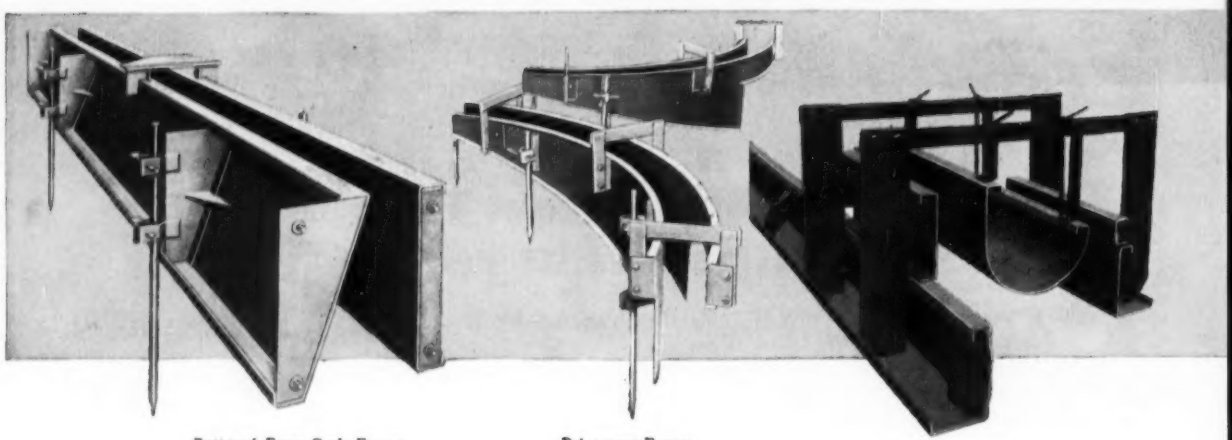


Road Forms

Straight Curb Forms

Curb and Gutter Forms



Battered Face Curb Forms

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Special Forms

For 49 years, Heltzel has been supplying leading construction firms with the industry's finest engineered forms for the widest range of application.

It is this broad experience that enables Heltzel to better engineer steel forms for any specific requirement. And, because Heltzel engineers are always searching for better forming methods, you can always be certain you're getting the most up-to-date equipment when you specify "Forms by Heltzel."

When next you're in the market for forms, standard or special, write direct or contact the Heltzel representative in your area. He carries many of the more popular styles and types in stock.

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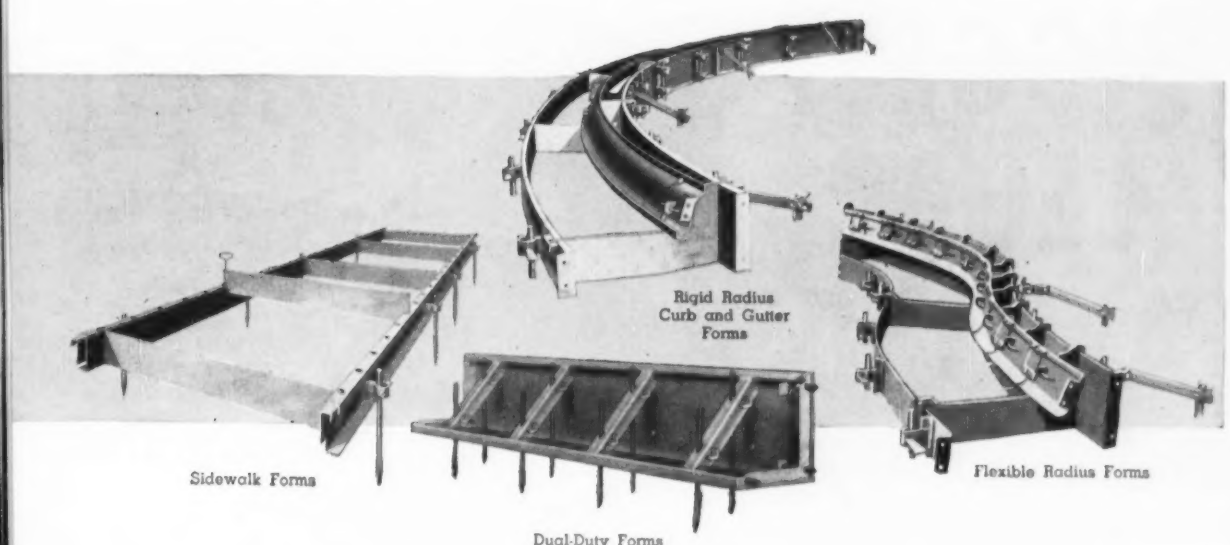

Rigid Radius Curb and Gutter Forms

Sidewalk Forms

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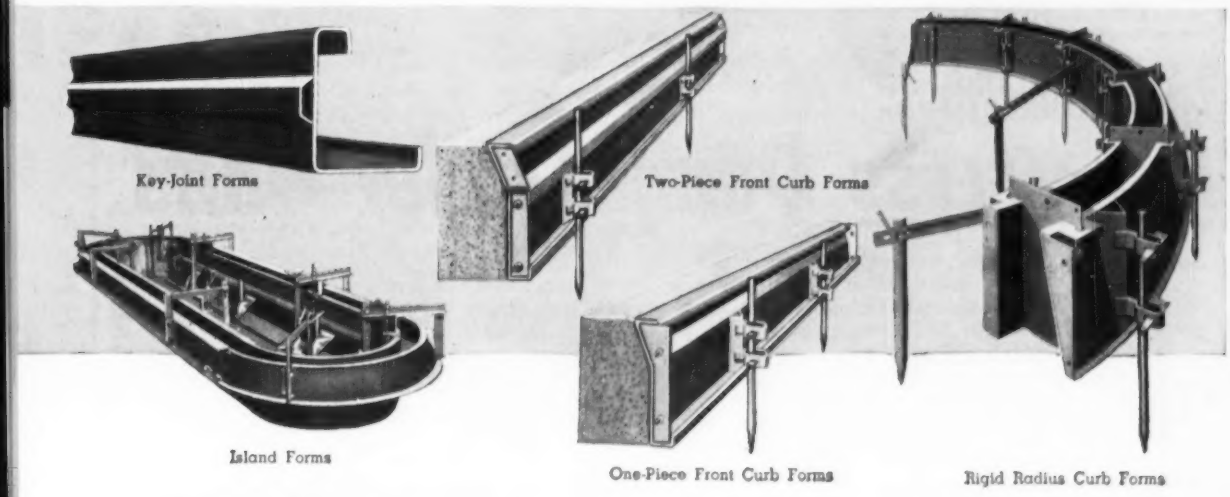
Flexible Radius Forms

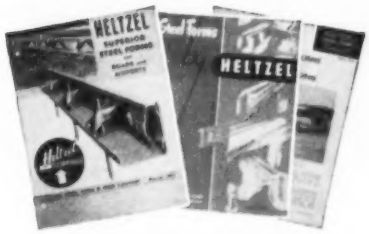


Key-Joint Forms

Two-Piece Front Curb Forms

Island Forms

One-Piece Front Curb Forms

Rigid Radius Curb Forms

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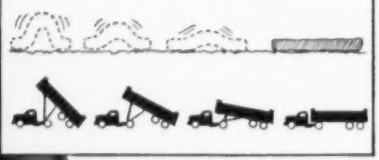
THE DUMP BODY WITH THE "INCH WORM TRACTION"



"Inch Worm Traction" lets you get out of soft spots by hydraulic power.

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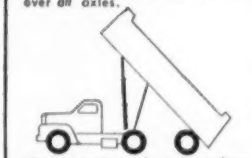
A completely new way to get more profit producing Payload—a frameless dump trailer that is literally "a dump body on wheels!" Elimination of the conventional extra trailer frame and other unnecessary dead weight mechanisms, makes possible up to 4000 lbs. extra *legal* payload by using a single Anthony telescopic hoist of new Teleramic head-lift design. Hoist location over tractor driving wheels gives excellent traction for spreading. Sloping tailgate lets you stockpile high and clean. *Write or call today for the "Complete Frameless Story."*

Load and weight distributed best over *all* axles.



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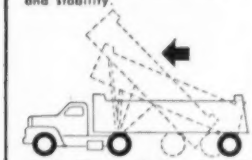

"Inch Worm" Traction for fill and spreading operations.

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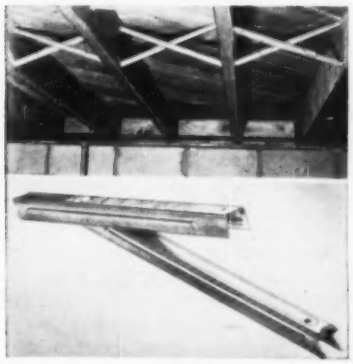


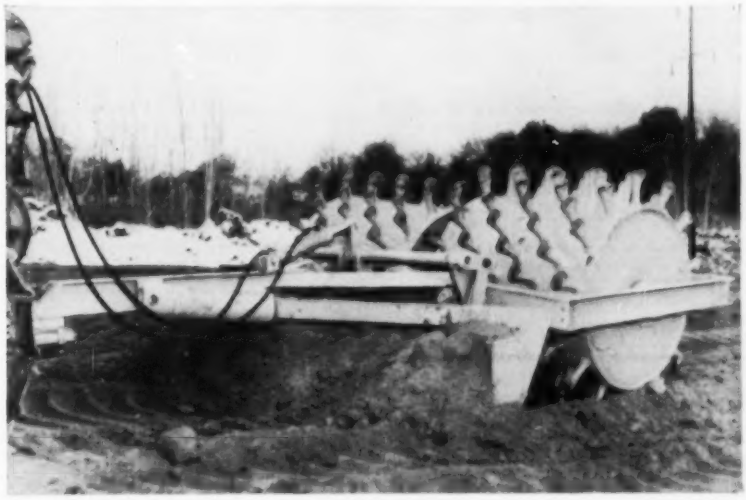
New Steel X-Bridging Snaps in Place by Hand

Cutting, sawing and nailing are eliminated by a new snap-in steel cross-bridging marketed for about 35 cents per set under the name Steel-X. The manufacturer claims the new product goes in five times faster than wood bridging, and cuts labor costs as much as 80%.

Each brace (two braces make one set or X) consists of two 20-ga ribbed channels, one nesting inside the other. A lug on the end of the inner part engages one of four slots in the outer (joist size and spacing determine which slot to use). The free ends of the two-piece assembly are spurred. With the brace positioned so that its spurred ends penetrate slightly into the joists, a downward pull by hand aligns the two sections and forces the spurs into the wood. Ribs on adjacent surfaces snap past one another and lock the two channels together so that they comprise a single rigid member.

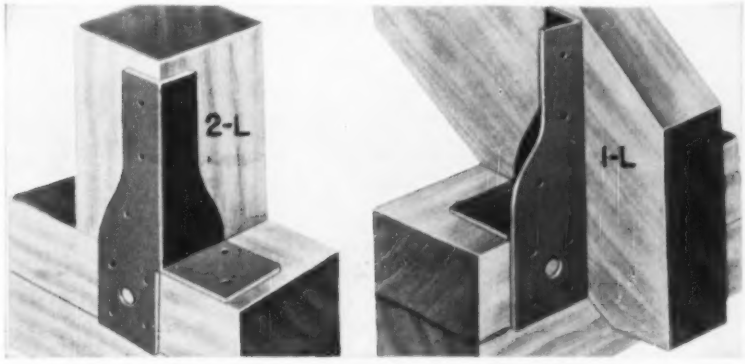
Removal and resetting—for alterations or to compensate for joist shrinkage—are as simple as installation.

Steel-X is available 50 sets per 45 lb carton, in one size, adjustable up to a maximum joist spacing of 16 in. Taber, Bushnell & Co., Inc., 1112 Metropolitan Bldg., Minneapolis.



More Even Compaction With Strike-Off Blade

A level blade attachment to fit Bros M2 series tamping rollers, and soon to be available for the company's G2 series, has been announced. Mounted directly in front of the tamping roller, the attachment is said to level off road fills, resulting in more uniform compaction results. The blade provides 7½-in. vertical movement control, and can be lowered to within five inches below the drum surface. The 17-in. high, 112-in. wide blade is made available with optional hydraulic or cable control. Wm. Bros Boiler & Mfg. Co., Minneapolis.



No Notches, No Toe Nail in Timber Construction

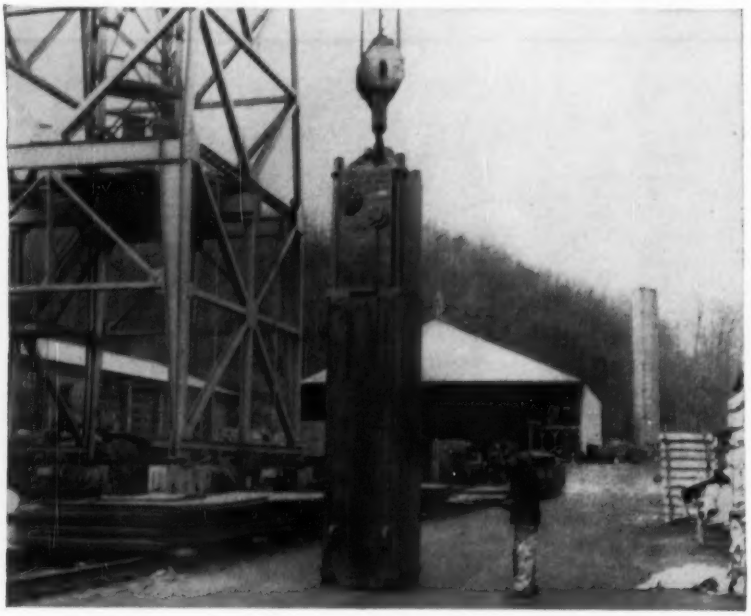
Builders frustrated by the splitting and subsequent waste of lumber that often accompanies a toe-nailed or notched connection will be interested in new metal framing connections produced in 18-ga galvanized steel. Designed to tie a wood structure securely together to resist forces from any direction, the new connections, termed "Cleveland Framing Anchors," can be used throughout a project on the entire framework. They may also be used to advantage around openings. Cleveland Steel Specialty Co., 3773 East 91st St., Cleveland 5, Ohio.

Hercules Introduces Its New Line of Power Units

Production has been started on four new series of diesel and gasoline engines by the Hercules Motors Corp. The new lines—diesel 4- and 6-cylinder series and gasoline 4- and 6-cylinder units (12 models in all)—will supplement the company's existing line.

The new gasoline engines, the "GO" (gasoline, overhead valve) are available in three different bore sizes in both series, as is the diesel line, designated "DD" (direct injection diesel). In addition, Hercules is developing a 3-cylinder GO and DD series. The company claims a design series that sets a precedent in interchangeability of parts and a large variety of applications without changing major engine components. Hercules Motors Corp., Canton, Ohio.

(New Products continued on page 62)



Deals Mighty Blow for Tideland Oil Exploration

Headed for the Gulf of Mexico and offshore oil exploration is a steam driven pile hammer that was designed and manufactured by the McKiernan-Terry Corp. of Dover, N. J., for Brown & Root, marine contractors of Houston, Texas. Claimed by the builders to be the heaviest in the world, the 20-ton hammer has a 10-ton ram that delivers 60 strokes a minute with a force of 60,000 ft-lb. Brown & Root is a principal contractor in construction of "Texas Towers," the man-made islands that support drilling equipment in the gulf.

Precut Shatterproof Panes Can Be Nailed Into Place

Window panes of translucent plastic that can be nailed into place are now manufactured in seven stock sizes for industrial windows. Until now, this shatterproof glazing, known as Corrulux, has had to be cut to size.

Corrulux flat panes come in "Maxlite" or "Skylight Green," two colors designed to give diffused lighting with minimum eye fatigue. Panes are available in two finishes—smooth both sides or crinkle both sides. No extra charge for precut panels. CORRULUX DIVISION, L-O-F GLASS FIBERS CO., P. O. BOX 20026, HOUSTON, TEXAS.

Tractor-Mounted Ripper Designed for Maneuvering

A tractor-mounted, hydraulically-operated ripper has been developed for use with the D-8 tractor that the manufacturer believes is far easier to maneuver than more conventional towed types.

Called the No. 8 Ripper, the new tool is equipped with two double-acting cylinders, that permit the operator to raise, lower, hold or float the big teeth whenever the engine is running. The ripper itself is mounted on special brackets that replace the standard drawbar brackets, although the standard drawbar clevis is retained and can be used when the teeth are swung out of the way. CATERPILLAR TRACTOR CO., PEORIA, ILL.

Air Operated Fish Tape Speeds Cable Pulling

Another time-honored hand operation gives way to mechanization with the announcement of a pneumatically-operated fish tape. A flexible steel cable is propelled by air through underground conduit to the desired manhole. A "projectile" at this cable's lead end is removed and either pulling cable or cleaning tools are attached.

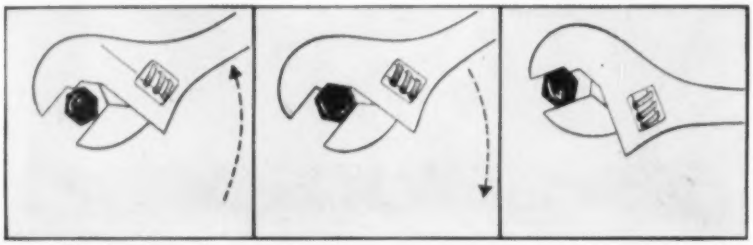
Then the air-lifted cable is retrieved through the line with its newly attached accessories, an air-operated motor engaging a reel to supply the power. Details of the device are available in Catalog No. 588. T. J. COPE, INC., 711 S. 50 ST., PHILADELPHIA.

Graders Feature Converter, Power-Shift Transmission

Two new motor graders combining a torque converter and full power-shift transmission have been introduced by Huber-Warco. Both models —the 140-hp 7-D and the 100-hp 6D —are said to provide greater work-load capacity and greater variations in torque output with only four forward and four reverse speeds.

The power-shift transmission permits quick shifts under full load at wide-open throttle without interrupting power flow from the engine to the load. A sliding moldboard—operated hydraulically from the cab—can be power shifted out of the way of culverts or posts and then power shifted back to its exact former position.

Complete hydraulic control of every working position—entirely governed from the cab—is another feature. The operator can attain a high bank-sloping angle up to 90 deg on either side without leaving the cab. The blade



Ratchet Action Without Ratchet Device

By simply adding a tiny shoulder to the upper jaw forging of a conventional adjustable wrench, a fast-action ratchet-like wrench has been developed and is now on the market. The extra contact surface allows for a secure bite on the nut, yet releases the bite when pushed upward. Despite the pumping action possible, the "Handi-Spin" wrench reverts to conventional adjustable wrench action if desired by simply using the main contact surfaces. Tedd Co., P. O. Box 1621, Rockford, Ill.

How to Set Down Only One Pound of a Nine-Ton Load!

Hydrocrane Does It with Precision Hydraulic Control

1 Hydrocrane's control is so fine that load movement can be almost imperceptible to the eye. Here a 9-ton load is lowered to ordinary household scale on table.

Take a good look at this remarkable demonstration of Hydrocrane control, then picture a Hydrocrane at work for you. For setting beams or concrete slabs, pouring cement or setting a plate glass window — *any* job that requires hairline control — nothing can beat the Hydrocrane in saving you time and money.

The all-hydraulic Hydrocrane is an expert at working in close quarters, too. It has the shortest tail swing, size for size, of any revolving crane, and its unique telescoping boom can reach out and poke a load into hard-to-get-at places.

Contractors who own Hydrocranes call them, "the handiest machine we have." You'll say so too when you get all the facts from your Bucyrus-Erie distributor. Do it soon.

SEEING IS BELIEVING!

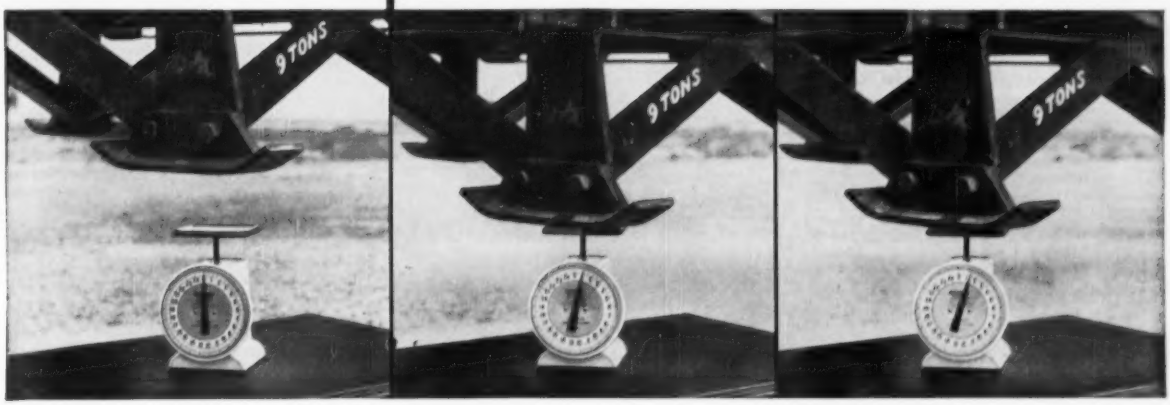
The experiments shown here were made with a standard 9-ton capacity H-5 Hydrocrane at Bucyrus-Erie's test and research grounds near South Milwaukee. The sled and billets, being lifted, totaled 18,363 pounds when weighed on a certified scale. Note that this is *the maximum rated lifting capacity* for this crane — hardly favorable conditions for such a test! 114H56

H-3 HYDROCRANE • 4-ton, ⅜-yard

H-5 HYDROCRANE • 9-ton, ½-yard

BUCYRUS ERIE

South Milwaukee, Wisconsin



2 Closer and closer it comes. No jerks — just a carefully controlled movement as load nears scale.

3 Contact! And so-o-o easy that scale registers only one pound of that big 9-ton load. That's precision control in action!

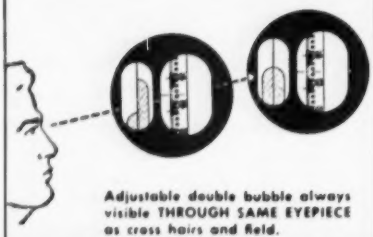
4 Now the operator "feathers" his control lever a hair, and look — the scale pointer moves to a pound and a quarter!

SURVEYORS!

Save time

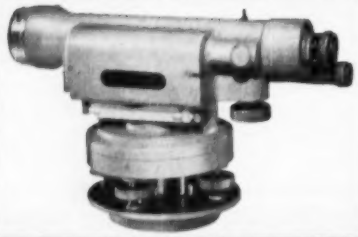
Save money

NEW LEVEL with



Adjustable double bubble always visible THROUGH SAME EYEPIECE as cross hairs and field.

DOUBLE BUBBLE



is "MISTAKE FREE"

- No need to turn telescope during leveling
- American type—erecting eyepiece, 4 leveling screws
- Unbelievably fast and accurate, yet simple-to-use. Economical!

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INSTRUMENT CORP. OF AMERICA
45-22 Pearson St., Long Island City, N. Y.

Please send me Booklet J with information on Fennel . . .

☐ Double bubble ☐ Alidades
☐ Other levels ☐ Collimators
☐ Transits ☐ Stands
☐ Combinations ☐ Tripods
☐ Theodolites ☐ Repair of present instruments, (any make)

NAME.....

ADDRESS.....

can be rotated 180 deg without removing the scarifier teeth.

Both grader models have hydraulic booster steering. This feature, with a minimum of parts, reverts automatically to manual operation in case of a power or hydraulic failure. HUBER-WARCO CO., MARION, OHIO.

New Device Weighs Trailers During the Loading Process

A portable device has been introduced on the market as an inexpensive and simple means of weighing trailer bodies during the loading process.

The device—called a "Trailer-Weigh"—is operated by placing a "U" channel member, which joins the tops of two cylinders, under the front end of the trailer body. Then hydraulic pressure is applied to rest the full weight of the trailer's front end on the piston assembly. When the trailer is supported by hydraulic pressure, the gauge valve is opened to get a reading in pounds pressure—translated into pounds lifted.

According to the manufacturer, periodic checking with the device will help prevent over-loading as well as load-shifting to get acceptable weight distribution on both the fifth wheel and rear axle. CEMCO INDUSTRIES, INC., GALION, OHIO.

Line of Small Plaster Mixers Are of New Type, Low in Cost

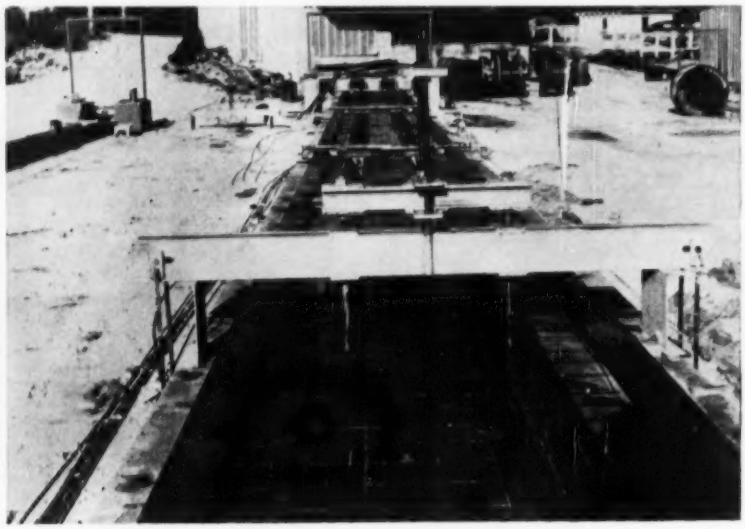
To meet the continuing demand for small low-cost concrete-plaster-mortar mixers, a division of Jaeger Machine Co. is offering a new line of 4-cu ft and 6-cu ft mixers that incorporate such features as geared hand wheel, ratchet drum control, box-type, drum-yoke construction, 3 x 2-in. frame with support stand, ⅜-in. alloy steel drum bowl, 22 x 6-in. mixing blades; roller-chain drive; and 2.8-hp engine. SPEED KING MANUFACTURING CO., 550 WEST SPRING ST., COLUMBUS 16, OHIO.

Rubber-Lined Pump Moves Slurries With Little Wear

A pump with rubber lining, a stainless steel shaft, only three wearing parts and a claimed freedom from the need for adjustments after initial setting is available for handling sand, coal silt and other such abrasive materials.

Maintenance of this pump is said to be limited to periodic greasing of the bearings and adding of packing as required. KANSAS CITY HAY PRESS COMPANY, 801 WOODSWETHER ROAD, KANSAS CITY, MO.

(*New Products continued on page 66*)



New Device Is Hold-Down for Tendons

There is no problem in sloping standard reinforcing bars in a concrete beam. But try to do this with prestressing wires in a pretensioned beam. As would be expected, when the tension is applied the wires become straight. A device trademarked "Form-Crete" can be used to hold down the tensioned wires, while another device holds the wires up at the ends of the spans. The change in slope of the wires applies an uplift to the concrete beam, counteracting stresses due to downward loads. Florida Div., Food Machinery and Chem. Corp., Lakeland, Fla.

...for smooth concrete

Fir plywood-formed surfaces are uniformly good-looking, fin-free.
Concrete can be painted after minimum of preparation.

...for economy thru re-use

Amortize plywood form costs over as many as 200 pours.*
Easy-to-handle pre-built sections cut application costs up to 20%.

...for design adaptability

Fir plywood easily forms curves, bas relief and other effects.
Requires no backing, won't crack or split. Can't rust.

...no other form material compares with Fir Plywood!

*depending upon grade specified; see below

ALWAYS SPECIFY BY DFPA GRADEMARK

INTERIOR PLYFORM® (water-resistant glues) gives up to 10 re-uses, forms smooth concrete. Mill-oiled, distinctive green edge sealer.

EXTERIOR PLYFORM® (waterproof glue) gives 25 or more re-uses, forms smooth concrete. Mill-oiled, distinctive red edge sealer.

OVERLAID FIR PLYWOOD—Exterior panels with hard, smooth, glossy fused resin-fiber surfaces. Forms finest architectural concrete. Gives as many as 200 re-uses.

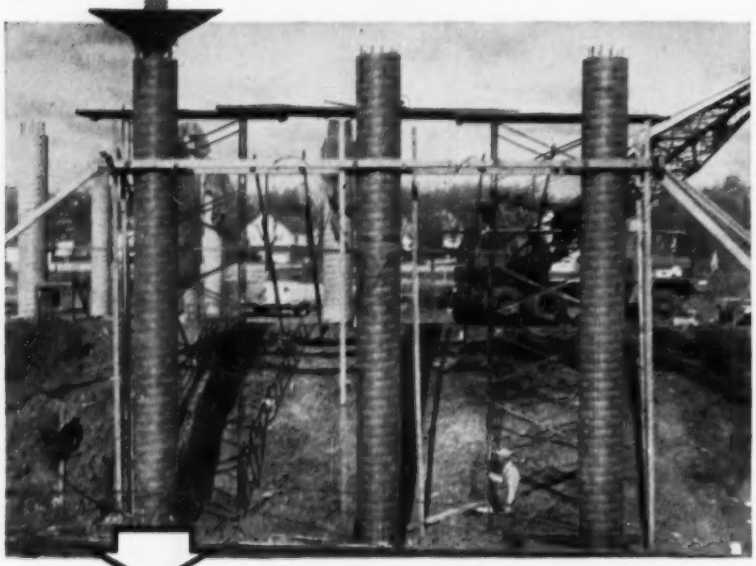
NEW PLYFORM CATALOG contains specification, application data. For free copy, write Douglas Fir Plywood Assoc., Dept. ENR, Tacoma 2, Wash. (Good USA Only)

Name .....

Address .....

City ..... Zone ..... State .....

SONOTUBE®-formed concrete bridge piers save time and money!



Highway Overpass, near Kansas City, Kan. State Highway Commission of Kansas, Bridge Dept., designers. L. G. Barnes & Sons, contractors

SONOTUBE®

FIBRE FORMS

for round columns of concrete

In the design of this Overpass the Bridge Department, State Highway Commission of Kansas, solved the problem of speeding up construction and holding cost down.

Low-cost SONOTUBES were used to form the round concrete piers because they required minimum bracing and were easy to handle . . . low-cost SONOVOID Fibre Tubes were used to form voids in the concrete bridge deck.

For forming all types of round concrete piers, underpinning and columns, SONOTUBE Fibre Forms save time, labor and money. SONOTUBES are particularly well suited for use with elevated structures because they can be sawed on the job to specific lengths to fit the ground profile.

SONOTUBES are available in sizes from 2" to 36" I.D. up to 50' long. Saw them to desired lengths on the job or order in lengths required. Use SONOTUBES on your next job . . . Sonoco's patented "A-coated" for finished columns; wax coated also available.

For complete technical data and prices, write

SONOCO PRODUCTS COMPANY

CONSTRUCTION PRODUCTS DIVISION

HARTSVILLE, S. C. — MAIN PLANT

LOS ANGELES, CAL. 9955 SOUTH WESTERN AVE.

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sonoco — AROUND THE WORLD — PAPER CARRIERS

REG. U.S. PAT. OFF.

. . . New Products

Modified Cement Bin Serves Two Operations

A modification of a standard cement bin to serve two separate operations—such as a concrete block plant and batch trucks and truck mixers—has been worked out, and is now available.

The idea of adapting the bin to serve dual purposes was developed jointly by the Concrete Products Co. of Thomasville, Ga., Contractors Equipment Co. of Atlanta and the Blaw-Knox Co., manufacturers of the equipment.

Adaptation was relatively simple: Discharge of weighed batches into trucks is done in the conventional manner. But to move cement to the adjacent block plant, an oblong hole was cut in the cone-shaped hopper bin, fitted with a collar within which was placed a 28½ ft long, 9 in. screw conveyor which empties into a hopper where batches are weighed for the concrete plant.

To regulate flow through this system, two sets of baffles were installed—one in the downspout to regulate gravity flow of the cement; the other is mounted inside the conveyor housing to prevent clogging and packing. BLAW-KNOX CO., FARMERS BANK BUILDING, PITTSBURGH, PA.

New Products Briefs . . .

• **Mobile crushing plant**—A newly-designed 100 to 125 yd per min single pass, mobile crushing plant has been put into production. Key unit is an 18x36 roller-bearing crusher. Its stationary and movable jaws are reversible for extra wear and can be adjusted to turn out 1 to 5-in. material. Both feed and discharge conveyors are powered independently of the crusher for more flexible operation. EAGLE CRUSHER CO., GALION, OHIO.

• **Rock drill**—A new version of a rock drill features a latch-type front head to assure a positive lock when pulling drill steels if mounted on a sinker leg. The air-operated tool, which weighs 55 lbs, is designed for drilling holes up to 20 ft deep in hard-type rocks. Model 77 is manufactured by the THOR POWER TOOL CO., AURORA, ILL.

• **Chutes for forms**—EFCO forms now come complete with a new slide chute device for placing concrete through the side of a form set-up. The chute can be removed after use and the opening closed with a 24x24-in. panel. ECONOMY FORMS CORP., DES MOINES, IOWA.

Publications

Drafting shortcuts—A 12-page booklet entitled "11 Ways to Save Drafting Time" is available free to engineers and draftsmen. It describes ways to use "intermediates" to modify drawings without changing the original. An intermediate is defined as any translucent-based reproduction master-printed from an original drawing to permit modification and to serve as the basic source of print-making. The methods described apply to various print-making processes: moist-developed, ammonia, blueprint, sepia negative, and reproduction cloths. Topics covered are: (1) corrector fluids, (2) scissor editing, (3) block-out method, (4) masking, (5) transparent matte tape, (6) non-reproducible blue, (7) successive additions, (8) pick-off transfer, (9) composite grouping, (10) composite overlays, and (11) pre-printing. READER SERVICE DIV., FREDERICK POST CO., 3666 N. AVONDALE AVE., CHICAGO 18, ILL.

Faster foundation forming—A new 5-page booklet gives a step-by-step description on how to construct a foundation wall for a small home with prefabricated forms in a total time for forming, (including setting, casting, stripping and moving forms), of less than 20 man-hours. The information is contained in Simplex Bulletin F-1026, "New Low-Cost Way to Form Foundation Walls for Floating Slab Homes." SIMPLEX FORMS SYSTEM, INC., 2500 N. MAIN ST., ROCKFORD, ILL.

Engineered fire protection—Building designers, plant engineers and the industry owner who are worried about how to provide adequate fire protection should find invaluable a 26-page booklet that describes methods of detection, prevention, control and extinguishment of "special hazard" fires. In the center of the booklet is a useful table of fire control and extinguishment. It cross references five types of fire control media with industrial hazards ranging from small open tanks to aircraft hangars—flammable liquids, and from explosives to escalator, corridor and fire-wall openings—flammable solids. The fire-control media referenced are: "fire-fog," "airfoam," high-pressure CO_2, low-pressure CO_2, and dry chemicals. Entitled "Engineered Special Hazard Fire Protection," it is available free from "AUTOMATIC" SPRINKLER CORP. OF AMERICA, YOUNGSTOWN 1, OHIO.

(*Publications continued on page 68*)

SONOVOIDS®
reduce weight and cost of bridge deck!

Highway Overpass, near Kansas City, Kan. State Highway Commission of Kansas, Bridge Dept., designers. L. G. Barnes & Sons, contractors

SONOVOID®
FIBRE TUBES
for voids in concrete construction

The Bridge Department of the State Highway Commission of Kansas designed this Overpass for economical construction!

Low-cost SONOVOIDS were used to form voids in the bridge deck in order to reduce weight and save concrete and reinforcing steel . . . and low-cost SONOTUBES were used as formwork for the piers!

SONOVOID Fibre Tubes eliminate dead weight by the displacement of concrete below the neutral axis . . . without impairing structural strength.

Use SONOVOIDS in concrete bridge deck, wall, floor and roof slabs and in forming hollow piles . . prestressed and poststressed precast units or units cast in place.

Supplied in specified lengths up to 50' long or can be sawed to your requirements on the job. Sizes 2.25" to 36.9" O.D. End closures available. Order SONOVOIDS for your next job!

For complete technical data and prices, write

SONOCO PRODUCTS COMPANY
CONSTRUCTION PRODUCTS DIVISION
HARTSVILLE, S. C. — MAIN PLANT
LOS ANGELES, CAL. 5955 SOUTH WESTERN AVE.
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AKRON, IND • LONGVIEW, TEXAS • BRANTFORD, ONT • MEXICO, D. F.

sonoco — "SERVES THE WORLD" — PAPER CARRIERS
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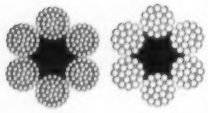
WHEN WIRE ROPE requires extra flexibility and must also lift or pull heavy loads, an unusually pliable, strong rope is needed. Rope jobs like paver skip hoists, overhead cranes, large shovel and dragline hoists, and sawmill carriages demand these qualities. That's where the use of 6 x 37 Red-Strand wire rope saves time and money.

Where will 6x37 Red-Strand improve your wire rope service?



6 x 37 6 x 19

Look at a cross section of 6 x 37 wire rope. You see three rings of small, uniformly sized wires in each strand. This differs from a rope construction like 6 x 19, which contains fewer and larger wires.

The *smaller size* wires make 6 x 37 more *flexible*. The *larger number* of wires maintains rope *strength*.

Would this combination improve your wire rope service? Would it solve a problem for you?

Check with your Leschen man. He can help you.

Leschen's 64-page Wire Rope Handbook tells you all about 6 x 37 and other Red-Strand wire rope constructions. Ask or send for your free copy.

LESCHEN WIRE ROPE DIVISION
H. K. PORTER COMPANY, INC.
St. Louis 12, Missouri

LESCHEN HKP
HERCULES *Red-Strand*® WIRE ROPE

. . . Publications

Rust inhibitor—Radioactive tracing techniques developed by Battelle Memorial Institute to determine the degree of penetration through rust to a protective coating system are presented in a 30-page illustrated report available from RUST-OLEUM CORP., 2980 OAKTON ST., EVANSTON, ILL.

For trowel trades—A new catalog lists, describes and prices tools used by journeymen and contractors engaged in any of the trowel trades, showing over 1,000 items. GOLDBLATT TOOL CO., 1960 WALNUT ST., KANSAS CITY, MO.

Road lines—A low-cost, self-propelled line marker is described in a bulletin that gives specifications and detailed operations of the unit. M-B CORP., NEW HOLSTEIN, WIS.

Welders—An 8-page folder gives complete description of manufacturing and job specifications, operation and advantages of "Shield-Arc" engine driven welders. LINCOLN ELECTRIC CO., CLEVELAND 17, OHIO.

Roof deck—This manual on wide-sheet metal roof deck with rib design for maximum strength to withstand construction loads includes a selection table, specifications, installation data, dimensional detail drawings. The eight-page bulletin is known as A.I.A. File No. 12-C. GRANCO STEEL PRODUCTS CO., 6506 NORTH BROADWAY, ST. LOUIS 15, MO.

Asphaltic concrete—Detailed information on Laykold asphaltic concrete and Bit-U-Mix paving mixtures for all types of road construction are provided in a 4-page booklet. AMERICAN BITUMULS & ASPHALT CO., 200 BUSH ST., SAN FRANCISCO, CALIF.

Portable electric plant—How lightweight, portable generating plants can save time and money for construction contractors is described in new illustrated folder. D. W. ONAN & SONS, INC., MINNEAPOLIS, MINN.

Passenger conveyor—An eight-page Speedwalk Passenger Conveyor bulletin includes photographs of existing installations, basic design and application data. Sketches illustrate possible applications. Also in the bulletin is Stephens-Adamson Goodyear Conveyor system that proposes to handle passengers in small cars riding on belts at speeds up to and above 15 mph. STEPHENS-ADAMSON MFG. CO., AURORA, ILL.

NEW LORAIN CRANE BOOM

Square Tubular Chords . . . Tubular Lacing . . . Increased Capacities with Less Weight, More Strength

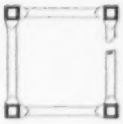
Thew-Lorain Crane Boom Design Increases Lifting Capacities . . . Permits Handling and Traveling with Longer Booms . . . Other New Crane Boom Features Provide Ease of Assembly Plus Total Lengths to 150 Feet*

Here's a brand new Crane Boom design that reduces boom weight 20 to 30%. Lighter, yet stronger, you can now put this weight saving to work for you in increased lifting capacities. The new Lorain "Square Tubular" Crane Boom is based on a new material and design idea. Departing from the conventional angle or tube construction, Thew-Lorain has selected square tubular members for the main chords of the boom. These are laced together with continuous lengths of round tubular lacing, preformed and welded to the square chords. The method of fabricating the lacing to the chords requires less lacing, saving weight, yet gives the same high torsional resistance and columnar strength as obtained by "banding" the boom. This revolutionary, new crane boom design is available as standard equipment on Lorain 8, 10 and 25-ton crawler cranes and 10, 22½, 25 and 30-ton rubber-tire cranes.

HANDLE LONGER BOOMS

The new, "Square Tubular" Crane Boom design, with greater strength at reduced weight, permits (1) increased lifting capacities, (2) raising longer booms from flat position, (3) traveling with longer booms over the rear. Crane sections are equipped with "erecting lugs" for ease in assembling long booms.

This shows a cross-section of the new "Square Tubular" Crane Boom design on which Thew has applied for a patent on the construction of this equipment and the method of fabricating it.



*2-PIECE TIP EXTENSION

The same principle of square tubular main chords, as used in the main boom, has been applied to the Tip Extension to give maximum lifting capacities at minimum weight. Tip extensions are made in 2 pieces, with suitable center sections, to permit varying overall length to meet job needs. For instance, on Lorain's 30-ton Moto-Crane, 150 ft. of boom including tip extension may be used. Tip extension may be used as straight or gooseneck extension.

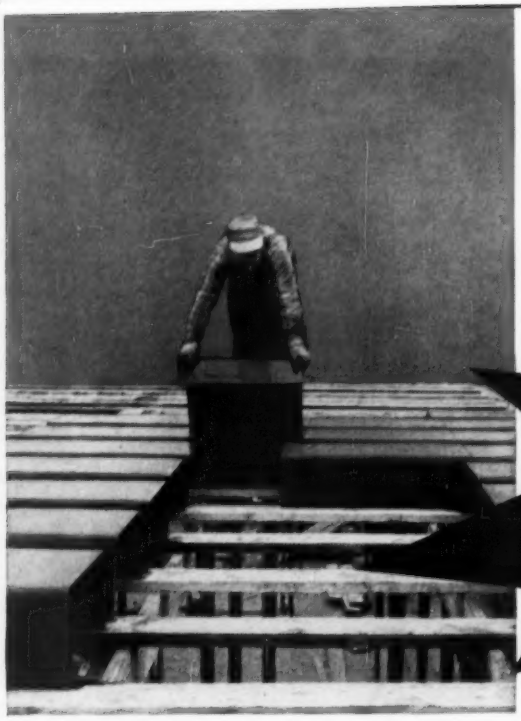
TILTING MAST-TYPE GANTRY

Recommended for use with all long booms . . . (1) for easier raising of booms from flat positions, and (2) to reduce stresses in long booms, pendants and cables while operating. Fabricated of square tubes, Gantry is hinge-pin connected to the Boom base and may be lowered for travel, or easily removed.

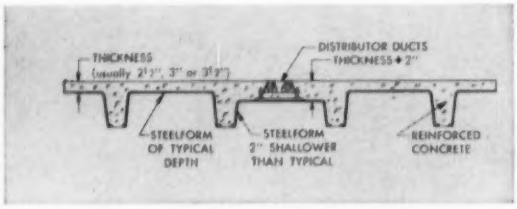
3-SHEAVE BOOM HEAD

This 3-sheave Boom Head permits reeving 6 parts of hoist line without the use of a top block and the resulting loss of vertical working range. Boom Heads are designed for ready installation of tip extensions or pile driver leads.

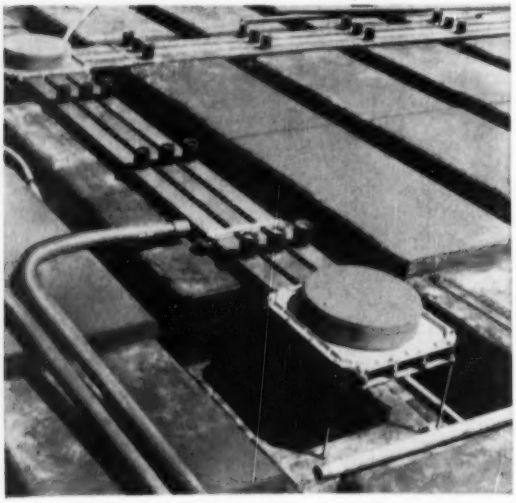
THE THEW SHOVEL CO.
Lorain, Ohio



Ceco-Meyer Steelform Construction saves steel, concrete, lumber and labor. The removable steelforms are quickly installed on simple open wood centering. Cost is reduced because the same lumber steelforms are re-used from floor to floor.



Cross-section through distributor ducts, showing the strength and simplicity of R/C Duct Floors made with Ceco-Meyer Reinforced Concrete Joist Construction.



Here's a partially completed 3-duct system. The electrical ducts are installed on top of Ceco-Meyer Removable Steelforms. Concrete is poured over and around ducts. Result is monolithic floor system—no fill needed.

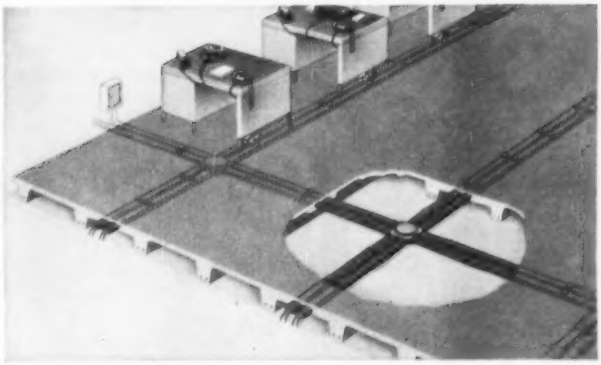
Electrified floors in reinforced concrete

...outlets every **2** feet along ducts...

Yet the cost is 19% less...due to Ceco-Meyer Steelform Construction

One of the prime necessities in buildings today is plenty of conveniently placed electrical outlets. And the most economical way to assure electrical flexibility is to build with reinforced concrete—with R/C Duct Floors provided by Ceco-Meyer Reinforced Concrete Joist Construction. That's how the problem was solved at the National Education Association Building, Washington, D.C., where R/C Duct Floors actually cost 60¢ per square foot less than cellular steel flooring, or a saving of 19%. In R/C Duct Floor construction, a network of steel electrical ducts is buried in the structural slab. Capped outlets every 2 feet along the ducts provide handy electrical connections for the telephones and business machines now in use. When expansion or re-arrangement is necessary, electrical equipment can be moved anywhere without costly rewiring or tearing up floors to provide electrical outlets. On your next building project, consult Ceco Engineers. They can save you money with R/C Duct construction—at the same time you get rigid Reinforced Concrete floors.

World Center Building, Washington, D.C.—another structure with the economical electrical flexibility of R/C Duct Floors provided by Ceco-Meyer Reinforced Concrete Joist Construction. Architect: Robert O. Scholz / Structural Engineer: Otto Vogt / Contractor: R.O. Scholz, Inc.



Standard electrical distribution ducts are buried in structural concrete. No additional fill or expensive topping is needed. Electrical connections are provided as close as every 2 feet along the ducts.

CECO STEEL

CECO STEEL PRODUCTS CORPORATION

Offices, warehouses and fabricating plants in principal cities • General Offices: 5601 West 26th Street, Chicago 50, Illinois

In construction products Ceco Engineering makes the big difference

To: Ceco Steel Products Corporation - 5601 W. 26th St., Chicago 50, Ill.
Please send me Ceco Manual of Reinforced Concrete Construction.

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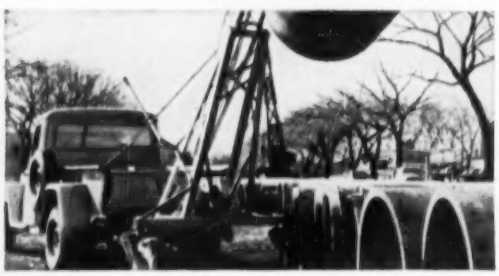
ENR

All-wheel traction. With the extra traction of its 4-wheel drive, the 'Jeep' Truck is an all-purpose, performance-proved workhorse for moving men, tools and equipment to or around construction sites. It carries more than a ton of payload, on the road or off—in low-low gear climbs grades as steep as 60°, fully loaded—tows heavily-loaded trailers where other vehicles can't go.

Contractors save time and manpower with 'Jeep' versatility and all-wheel traction!

Transportation. The 4-Wheel-Drive Universal 'Jeep' is always on-the-go—whether carrying engineers for initial surveys, speeding men, equipment and tools to construction assignments, or providing transportation for final inspection work.



Mobile power. Taking power to the job, on-the-road or off, is simplified with a rugged 4-Wheel-Drive 'Jeep' Truck equipped with power take-off and crane, or other specialized equipment. It also operates welders, compressors and generators.

In every phase of construction, whether travelling through deep fill with men and tools, or operating earthmoving equipment, 4-Wheel-Drive 'Jeep' vehicles save time and manpower, help keep work on schedule every day of the year, good weather or bad.

These time-tested rugged vehicles provide a mobility and range of performance that is unmatched. The extra traction of their 4-wheel drive provides the go-anywhere power that keeps tough jobs moving. 'Jeep' vehicles go where other vehicles can't in the heavy, rough going of the construction project. Then, on the highway, a flick of the selector lever shifts them into conventional 2-wheel drive for travel at top legal speeds. With power take-off or hydraulic lift, they provide on-the-spot power to operate many types of equipment from dozer blades to back hoes.

Economical 'Jeep' vehicles supplement heavy-duty equipment, spread their cost over a wide variety of jobs, give you additional savings through long life and low maintenance costs. Ask your Willys dealer for a practical, on-the-job demonstration.

The 'Jeep'®

family of 4-wheel drive vehicles

WILLYS... makers of the world's most useful vehicles

WILLYS MOTORS, INC., TOLEDO 1, OHIO

Men and Jobs

Paul O. Harding

Col. George T. Derby

Highway Engineer Leaves California for Honduras

Paul O. Harding, California assistant highway engineer in charge of Los Angeles, Orange and Ventura counties, has resigned to take on the job of directing highway development for Honduras, S. A.

Harding left this month for Tegucigalap, Honduras, where he will be resident engineer for the engineering firm of Upham, Porter-Urquhart Associated. This firm has a 2½-year contract to organize a national highway department along California lines and to make design studies for new roads.

Now 63, Harding has been with the California Division of Highways since 1929, when he joined it as an inspector and instrument man in the San Francisco district.

A civil engineering graduate of the University of Nebraska, Harding supervised the design and construction of the approaches to the San Francisco-Oakland Bay Bridge and has since been closely identified with the metropolitan Los Angeles freeway development.

District Engineer to Retire From Huntington, W. Va. Post

Col. George T. Derby, district engineer for the Corps of Engineers at Huntington W. Va., will retire in May.

A veteran of nearly 29 years of service, Col. Derby has worked for the last three years on improvement of the Ohio River and flood control protection in the Huntington district. Among the projects that have come under his supervision are the floodwalls at Maysville and Catlettsburg, Sutton Reservoir on the Elk River and Greenup Locks and Dam on the Ohio River.

After his retirement, Col. Derby will join Ashland Oil & Refining Co.

Lamoureux Named Member Of Mission to Uruguay

Vincent B. Lamoureux, sanitary engineer director with the Public Health Service, has been named a member of the U. S. Operations Mission to Uruguay. He has recently completed a tour of duty as assistant chief, Near

V. B. Lamoureux

You'll build far better with steel buildings

This neat, modern-looking factory is a low-cost, aluminum-sheeted Butler multiple. It will stay good-looking for decades.

if they're pre-engineered and factory finished by BUTLER

Butler does things with metals and methods that shape steel and aluminum into today's most practical building. Quality-controlled through large investments in engineering, dies and machinery. Price-controlled through mass production and factory finishing of all parts. This gives you features like die-formed covering panels, assembled with special bolts . . . a permanent weatherseal in any climate. Erect Butler buildings in half the time at half the cost. Bolt assembly means you can expand or change working space quickly—economically—and salvage all the original material. Reduce maintenance—they need no re-roofing, tuck-pointing or other costly preventive maintenance. Get all the facts. Mail coupon today.

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Manufacturers of Oil Equipment
Steel Buildings • Farm Equipment
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Factories at:
Kansas City, Mo. • Galesburg, Ill. • Minneapolis, Minn.
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Please mail more information on Butler steel buildings.
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Schramm Pneumatractor, self-propelled right to the job, is a complete air-compressing plant for auxiliary equipment. Here it is shown with DeLuxe Pneumafeed mounted for test drilling.

A CONSTRUCTION SUPERINTENDENT DISCOVERS:

The most convenient, lowest-cost way to bring compressed air to the job.

Putting compressed air to work on the job has never been easier or more economical. The operator merely climbs into the seat of his Schramm Standard Pneumatractor and drives a complete air compressing plant right up to the job. No other equipment or labor is involved.

On arrival, this rugged 125 c.f.m. air compressor with tractor features can push, pull, provide mechanical power and compressed air for operating a variety of auxiliary equipment.

The cost of the Standard Pneumatractor is low; less than many two wheel mounted compressors alone. It's cheaper to operate and maintain, too. Any engine service man can service the Pneumatractor with very little instruction.

Ask your local Schramm dealer for a demonstration of the Standard Pneumatractor. He's listed in the Yellow Pages of your Telephone Directory.

Write for Catalog 5545 and free informative booklet, "Piston vs Rotary Air Compressors."

Equipped with a Rotary Sweeper, the Standard Pneumatractor is ideal for sweeping leaves, dust, snow or light dirt. Rotation of brush is independent of speed of Pneumatractor.

Pneumajack, mounted on a Standard Pneumatractor, does a variety of jobs from drilling for mud jacking to production drilling.

Schramm, Inc.

MANUFACTURERS OF AIR COMPRESSORS

620 North Garfield Ave. West Chester, Pa.

East and African Branch, Public Health Division of the International Cooperation Administration, to which he's been assigned since 1953.

In Uruguay, he will be an advisor on urban and rural sanitary engineering problems and will instruct university students in public-health engineering.

A civil engineering graduate of Cornell University, Lamoureux joined PHS in 1931, following associations with the Geological Survey, the Illinois State Department of Highways and Public Health and the Florida State Department of Health. He has since served as sanitary engineering consultant to the National Security Resources Board and as radiological defense consultant to the Federal Civil Defense Administration.

Partnership Formed by West Coast Engineers

John J. Gould and H. J. Degenkolb have formed a partnership in San Francisco for the practice of civil and structural engineering.

Before establishing his own practice in 1940, Gould worked with the California Division of Architecture immediately following the 1933 earthquake, spent eight years as chief designer for L. H. Nishkian in San Francisco, and served as chief engineer for the 1939 World's Fair on Treasure Island. He attended engineering school in Zurich, Switzerland, and worked in France and Egypt before coming to the U. S. more than 25 years ago.

Degenkolb worked with Gould as a junior engineer on the World's Fair

J. J. Gould (right) and H. J. Degenkolb

The Surveyor's Notebook

Reporting on Unusual Surveying Problems and Their Solutions

Notekeeper: W. & L. E. Gurley, America's Oldest Engineering Instrument Maker

How Disney's Magic Kingdom Grew in an Orange Grove

Disneyland: Before...

...During...

...After

"When we first started work on Disneyland—just about one year before it opened—it was a 160-acre orange grove," recalls Donald J. Hallgren, Walt Disney's Field Engineer on the job. "McNeil Construction Company, Los Angeles, furnished all the necessary equipment, men and materials; Disneyland, Inc. furnished plans, specifications and the engineering personnel.

"This is where I came in as coordinator between plans and building phases of the job. My job was to coordinate the survey, staking, etc., necessary to keep the prime contractor's crews of carpenters, electricians and earthmovers busy.

"Imagine an orange grove with a tree every 25 feet, and you'll see our problem. Out of this grove was constructed a half-mile long river, six feet deep and averaging 200 feet wide along its winding course, with waterfalls, sandbars, docks and drydock for a real paddle boat. (This boat, like everything else in the park, was built ⅝ths scale.) Another river was built one-quarter of a mile long, depicting any jungle in the world, complete with mechanical moving animals. It would take a small volume to detail the unusual problems and angles we encountered.

"Without the excellent work turned in by our survey parties, this job could never have been completed on time. During grading operations for our 100-acre parking lot, for instance, earthmovers needed grid and grade stakes on every 50-foot square. I would have one party doing nothing else but running lines and driving lath and flats, and two more crews following them, reading and marking the cuts and fills. As fast as my men drove the stakes, the equipment would cut and fill around them. I sincerely believe that, at one time or another, every square foot of that 160 acres has had a two-inch-by-two-inch hub driven in it for one reason or another.

"Imagine the strain on my crews—to be just starting a layout for a building, have all control run and to be getting ready to run line, and then have me drive up and move them over to some still higher-priority job. With all this confusion, there was one thing we could *always* count on. That was the precision and rugged nature of our Gurley instruments, which never let us down in a jam.

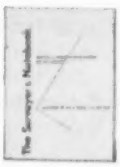
"Now, watching all the children at Disneyland having such a great time in their magic kingdom, it is difficult to remember the hectic side of those construction days. Let's just say: 'Never was so much done, in such a short time, by so many!'"

"Surveyor's Notebook" Tips

Can you use these field aids? Gurley can supply 50-pound test yellow nylon plumb bob cord, to add to the visibility of your string in poor lighting. Also a cord adjustor, which helps you make quick changes in line length in the field. Send 25 cents in stamps or coin for a set of cord and adjustor with a drawing showing how to use them.

* * *

Change your magnification to suit weather and light conditions. It's possible with *Variable Power*—now standard on all Gurley transits and levels. "VP" permits wide range of magnification with *one* eyepiece. Built-in haze filter. Write for "Facts on VP".



NEW EDITION OF "SURVEYOR'S NOTEBOOK": We have collected the most helpful, most discussed pages from Series One and Two of "The Surveyor's Notebook" in one 20-page book. These valuable field tips will help you use your own instruments with greater success. *Write for your free copy.*

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Since 1845

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Surveying and Engineering Instruments, Hydraulic Engineering Instruments, Standard Precision Weights and Measures, Paper and Textile Testing Instruments, Reticle Making Facilities, Aeronautical Navigating Instruments, Meteorological Instruments.

project and joined the Gould firm in 1946.

R. Gordon Dean and Thomas D. Wosser have been named chief engineer and office engineer, respectively, for the new firm.

Kentucky Names Director Of Highway Construction

Thomas H. Baker, Frankfort, Ky., has been appointed director of construction for the Kentucky Department of Highways.

Baker succeeds Cabell Owens, who resigned last fall to join a highway construction firm. James Hill was acting director until Baker's appointment and is now assistant director under Baker.

A former employee of the highway department, Baker recently worked on a two-year highway-need study sponsored by the Automotive Safety Foundation. He previously spent seven years as an engineer on various projects in the Philippines, Greece, Labrador, Australia, Brazil and Burma.

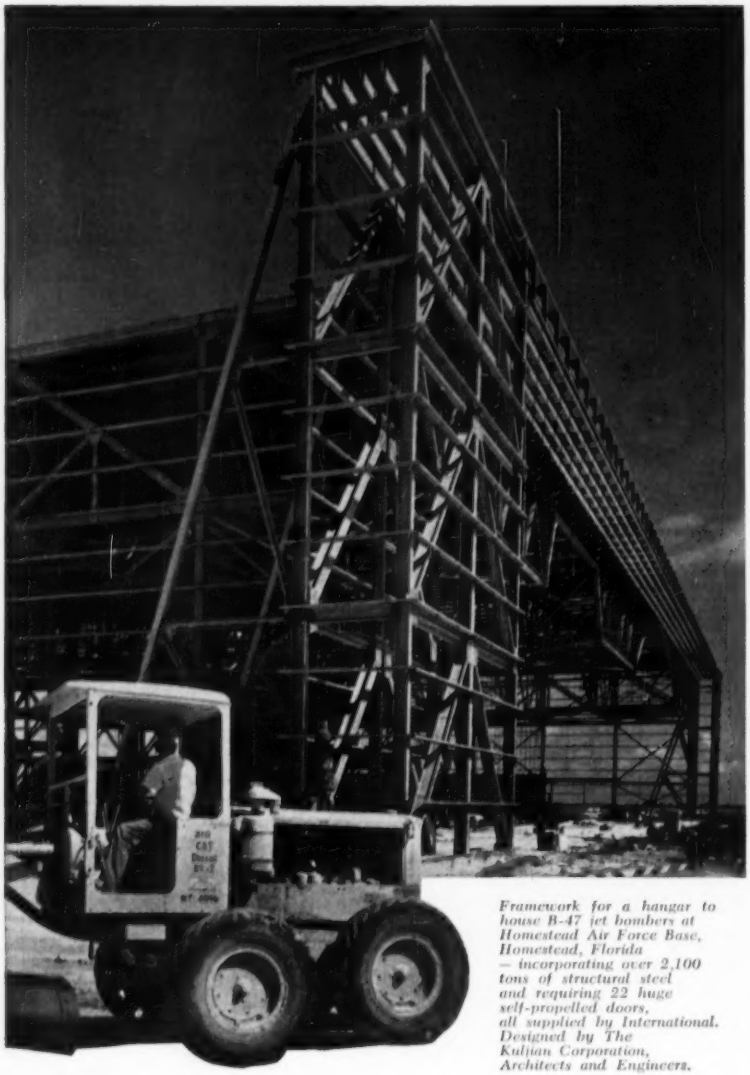
George Aulbach Appointed A Vice President of Noonan

The engineering and contracting firm of R. S. Noonan, Inc., York, Pa., has appointed George L. Aulbach, former chief engineer, as vice president of sales and engineering.

Aulbach joined the firm 10 years ago, after World War II service in the Pacific with the Navy's Civil Engineering Corps, and became a director in 1953.

He is also vice president and a director of Sherrill-Noonan, Inc., industrial builders.

G. Aulbach



Framework for a hangar to house B-47 jet bombers at Homestead Air Force Base, Homestead, Florida — incorporating over 2,100 tons of structural steel and requiring 22 huge self-propelled doors, all supplied by International. Designed by The Kuljian Corporation, Architects and Engineers.

housing . . .

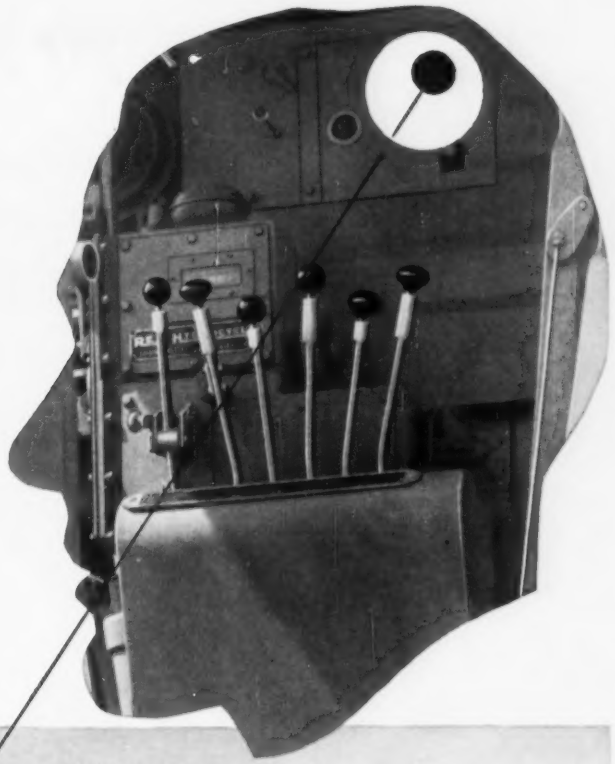
FOR THE HIGH AND MIGHTY!

INTERNATIONAL SERVICE to the aviation industry covers the principal phases of hangar construction. The world's biggest and highest-flying aircraft . . . as well as pint-size personal planes . . . are housed in International-built hangars located in every part of the country. The nation's leading industries, including those engaged in every field of building, are well represented on the ever-growing list of regular users of International *completely integrated* service. How can we serve *you?*

INTERNATIONAL SERVICE **INTERNATIONAL STEEL COMPANY**

2110 EDGAR ST. • EVANSVILLE 7, INDIANA

Why you're always "yards" ahead with a REX® Paver

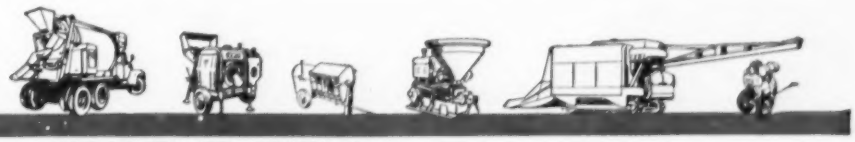


You'll finish "yards" ahead every day with a Rex... because the "hydraulic brain"—Hydrocycle Control—helps you pour more yards—faster! Hydrocycle saves you seconds every batch...you place more batches every day. That's dollars saved every day!

Hydrocycle takes over once the operator sets the batch meter...controls and operates the entire cycle. It eliminates the human element...cuts operator fatigue. There's no guesswork...no wasted seconds. The operator never has to leave his seat. He stays fresher...more relaxed...is able to give you the same high-speed operation at the end as well as at the start of the day. And he has far more time to perform the other paver functions—travel the bucket, swing the boom, spread the batch and move the paver. It's the big reason why Rex is the fastest paver in the business...makes more profit for you every day!

For all the facts, see your Rex Distributor or write CHAIN Belt Company, 4633 W. Greenfield Avenue, Milwaukee 1, Wis.

CONSTRUCTION REX MACHINERY



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The Best of Our 79 Years

OF FAN ENGINEERING ARE IN IT!

"Wheel-suited", streamlined housing for best air flow
Bell-shaped die-formed inlet, welded-on die-formed curved inlet vanes for most efficient air entry
Ample collar for easier duct connection
Anti-friction or sleeve bearings
Stable from free air delivery to shutoff
Non-overloading
Die-formed backward curved blades for stable air flow
Low cut-off Outlet designed for best air delivery
"BUFFALO"
TYPE BL VENTILATING FAN

The "Buffalo" Type BL Ventilating Fan is the result of a great deal of research added to what we've learned about air handling in all these years. A variety of improved housing and wheel designs were put through exhaustive tests for performance — stability — noise level — critical rotor speeds. The wheel shown at right, for instance, proved superior to any other design. Its dished, die-stamped flange and backward curved blades assure stable air flow. Write for Bulletin F-100 and see the "Q" Factor* features that make "Buffalo" your best air buy!

**The "Q" Factor — the built-in Quality which provides trouble-free satisfaction and long life.*

"Buffalo"

BUFFALO FORGE COMPANY
BUFFALO, NEW YORK

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

VENTILATING AIR CLEANING AIR TEMPERING INDUCED DRAFT EXHAUSTING
FORCED DRAFT COOLING HEATING PRESSURE BLOWING

Acting Chief Engineer Named For Hartford Bridge Agency

Edwin B. Burdick of Hartford, a senior engineer in the Connecticut State Highway Department, has been appointed acting chief engineer for the Hartford Bridge Authority. Created by the legislature last year, the authority will construct five bridges across the Connecticut River to serve the communities in the Hartford area.

Estimated to cost $45 million, the bridges will be financed by bond issues which in turn will be retired by proceeds from toll collections. In some cases, the cost of approaches will be borne by the state highway department.

One of the bridges is now under construction between Hartford and East Hartford.

Men and Jobs Briefs . . .

• **Associations**—The American Council To Improve Our Neighborhoods appoints James E. Lash, chief of the West Coast office of Harland-Bartholomew and Associates, city planning consultant firm of San Francisco, as executive director . . . **Earl W. Peterson**, vice president of the Ideal Stone Cement Co. of Omaha, Neb., is named president of the National Concrete Masonry Association . . . **Edward C. Keane** of the engineering firm of Fay, Spofford & Thorndike, Boston, is elected president of the Northeastern Section of ASCE.

Florian E. Davat of Kern Instruments, Inc., White Plains, N. Y., is named president of the New York Section of the American Society of Photogrammetry . . . **Roger L. Flanders**, chairman of the civil engineering department at Oklahoma A & M College is installed as president of the Oklahoma Society of Professional Engineers . . . **William B. F. Drew** is re-elected president of the Building Trade Employers' Association of New York for the third time.

• **Corps of Engineer**—**Kenneth T. Coffman**, civil engineer in the Seattle district office, is appointed acting project manager at Albeni Falls Dam, northern Idaho. He succeeds **James F. Grafton**, who becomes propect engineer for the Eagle Gorge Dam on the Green River, King County, Wash.

• **Careers**—The former administrator of the Hoover Commission task force on water resources and power, **Charles D. Curran**, opens a private consulting office in Washington, D. C.

Rollin D. Barnard becomes deputy assistant postmaster general, Bureau of Facilities, which handles all construction projects under the department's lease-purchase and straight leasing programs.

C. M. (Max) Gillis is appointed deputy director of the California Department of Public Works . . . **Robert J. Juster** of Mobile, Ala., accepts a newly-created job of planning engineer for the city of Chattanooga, Tenn . . . **Harold M. Alexander** is named to the new post of city engineer of Chillicothe, Ohio.

• **Business**—The firm of Mayer and Whittlesey, New York architects and engineers names **M. Milton Glass** a partner and changes its name to Mayer Whittlesey & Glass . . . **Victor E. Hall** and **Seymour Ribyat,** consulting engineers, form a partnership under the name of Hall & Ribyat at Syracuse, N. Y. . . . **D'Anson Isley** and **Robert D. MacKinnon, Jr.,** staff architects, become partners in the firm of Ketchum, Gina' & Sharp, New York architects.

Charles D. Salb, vice president of the Woerful Corp., Milwaukee general contractors, is named executive vice president of the company . . . **William C. Green,** a former structural engineer with the Bureau of Yards and Docks, Department of the Navy, is named chief of the engineering department of Texcrete Structural Products Company, an affiliate of Texas Industries, Inc., Dallas . . . The Holmes Construction Company of Wooster, Ohio, appoints **Theodore J. Kauer** as chief engineer.

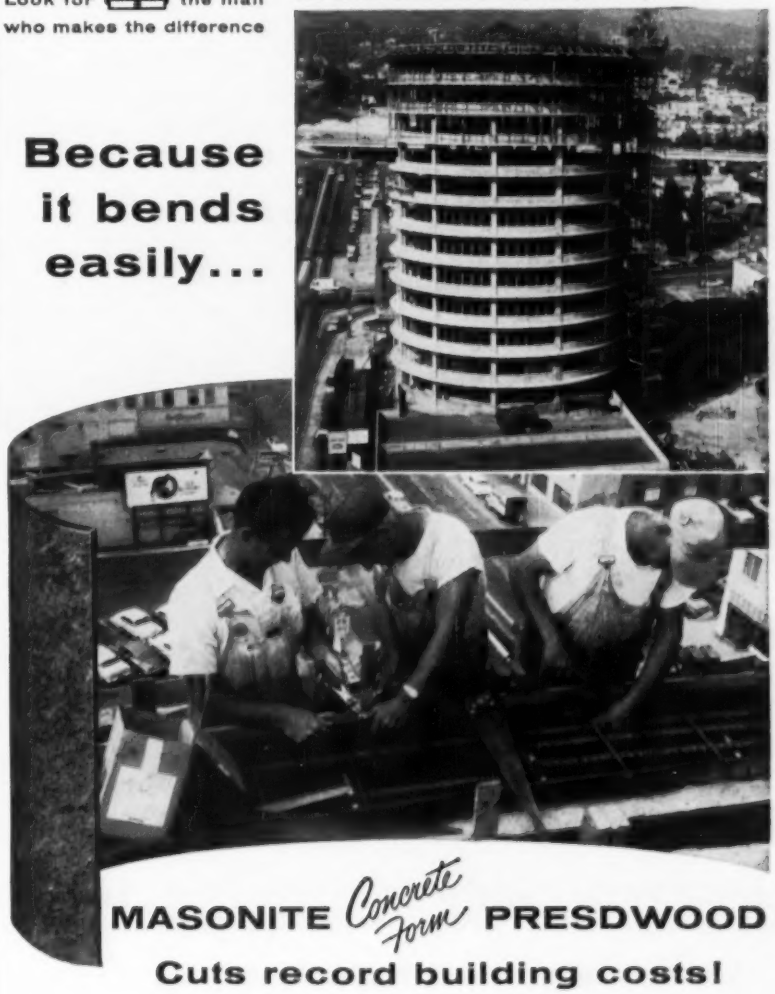
Robert E. Eby is named chief engineer for Rilco Laminated Products, Inc., designers and fabricators of engineered wood products, St. Paul, Minn. . . . **Mark Sagal** is appointed manager of the Building Div. of B. Perini & Sons Inc., Framingham, Mass. . . . The Permutit Company of New York promotes **Charles Bueltman** to manager, Industrial Waste Treatment Department.

• **Education**—**Alfred J. S. Pippard,** head of the department of civil engineering Imperial College, University of London, will join the Northwestern Technological Institute faculty as visiting professor of civil engineering. An authority on aircraft structures, stress analysis and elasticity, Pippard will serve both in teaching and advisory capacities.

Look for the man who makes the difference

Capitol Records Building, Hollywood, Calif.
Architect: Welton Becket, FAIA, Los Angeles, Calif.
General Contractor: C. L. Peck, Los Angeles, Calif.

Because it bends easily...



MASONITE *Concrete Form* PRESDWOOD

Cuts record building costs!

Here's a unique design—the world's first circular office building.

And a unique material formed the spandrels. Masonite Concrete Form Presdwood® bends readily to form gentle, sweeping curves, arches and rounded columns. These dense, tough, hardboard panels leave a glassy-smooth concrete surface with no blemishes of wood grain or knots. They can be used again and again. In 4′ widths and lengths to 12′, they reduce the number of joints and they're easy to cut and fit.

You can cut costs 3 ways!

1. Screen side to concrete—for unpainted surfaces. Tiny projections left in concrete cut hand-rubbing cost up to 50%.
2. Screen side to concrete—for painted surfaces. The textured surface left in concrete forms an excellent bond for paint. Only minimum rubbing required.
3. Smooth side to concrete—for painted or unpainted surfaces, rubbing virtually eliminated. No knots, grain or blemishes in Masonite Presdwood to mar the finished concrete surface.

SEND FOR FREE SAMPLE!

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Please send me a sample of Concrete Form Presdwood and your free booklet on cutting costs three ways.

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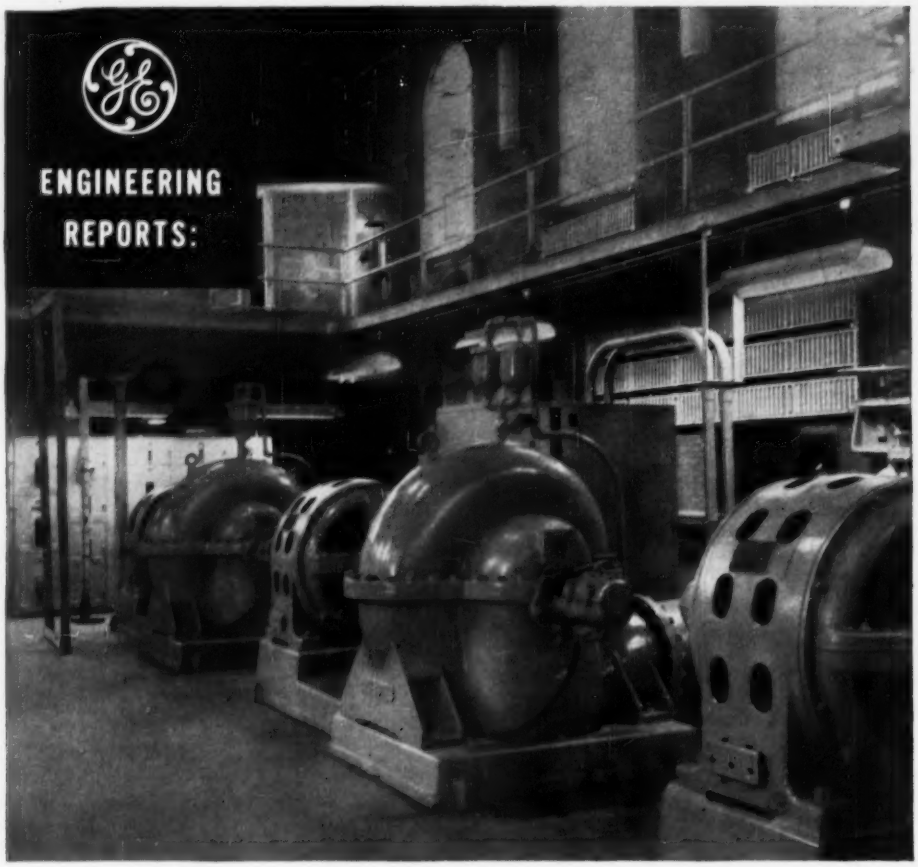
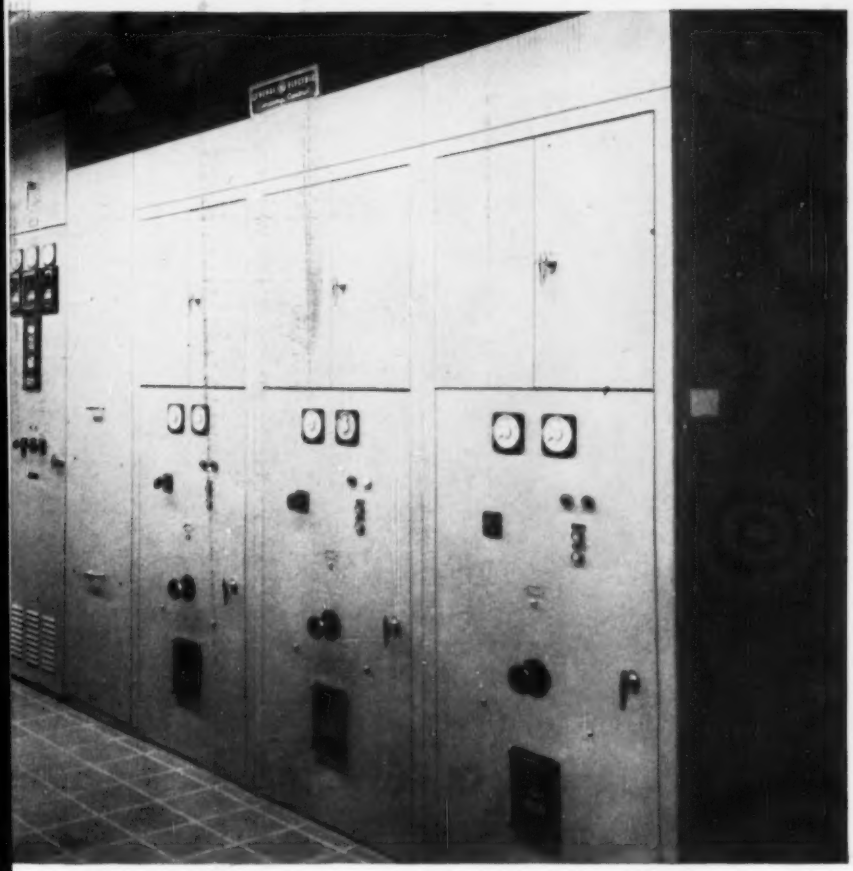
Address .....
Town ..... *Zone* .....
County ..... *State* .....



30 YEARS OF SERVICE is record of these G-E induction motors from original installation. Modern Cabinetrol* and drawout circuit breaker lineup helps protect, control motors and power circuits.

General Electric helps Indianapolis double

FARSIGHTED PLANNERS of expansion and power system include (l-r) M. H. Miller of Watson-Flagg Engineering Co., electrical contractors; F. H. Stout of Ammerman, Davis and Stout, consulting engineers; D. O. Bender, plant superintendent; and L. C. Stang also of the consulting firm, shown discussing system with E. S. Bush, G-E sales engineer (standing).



HIGHLY RELIABLE protection, control of high-voltage circuits and motors in blower building is provided by General Electric metal-clad switchgear and Limitamp† starters.

sewage treatment capacity

Working with customer, consultants, and contractors, G.E. helped plan power system to meet loads expected by 1976

To assure first-class sewage disposal for its growing population and industries, Indianapolis began a $12 million expansion of its 32-year-old treatment plant in 1951. Today, capacity has been raised from 50 to 120 MGD and facilities have been expanded to provide full secondary treatment. **ENGINEERING ASSISTANCE** was made available by General Electric to the city, its consultants, contractors, and machinery manufacturers from the earliest phases of planning through equipment start-up. G-E engineers, specially skilled in this type of application, helped prepare specifications and designs that will assure the ability of the new power system to handle loads anticipated for the next 25 years.

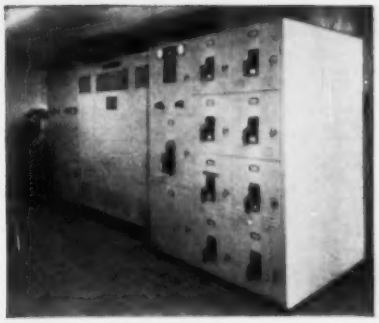
This same G-E service and equipment can be put to work for you on your next project. Contact your G-E Apparatus Sales Representative. Also ask him about using the film CLEAN WATERS to help you gain public support for sewage projects. General Electric Co., Schenectady, N. Y.

*Reg. Trade-mark General Electric Co.
†Trade-mark General Electric Co.

664-39

Engineered Electrical Systems for Sewage Plants

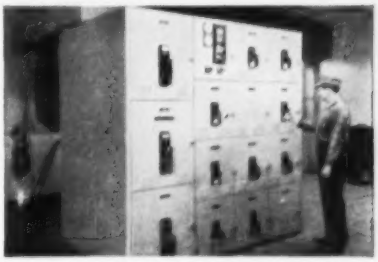
GENERAL ELECTRIC



"BUILDING BLOCKS" of power, G-E load-center unit substations can be easily added to serve new loads. Packaged units facilitate handling, installation, operation.

CUSTOM ENGINEERED of standard components, Cabinetrol panel allows centralized control of settling tank motors. Units offer space and access for easy wiring.

HIGH SAFETY, reliability of G-E metal-clad switchgear at service entrance helps assure vital power continuity. Magne-blast breakers require little maintenance.



OPERATOR SAFETY is only one feature of G-E drawout circuit breakers Applied with ample interrupting capacity for near-future loads, they assure high reliability.

Du Pont Explosives go trail-blazing in the Poconos

. . help smooth 5-mile stretch for Pennsylvania Turnpike extension

1. Huge fill in the Poconos is typical of rugged 5-mile section of Pennsylvania Turnpike contracted by J. Robert Bazley, Inc. When finished, the extension will run from King of Prussia to Scranton.

2. All-around explosive — Du Pont 50% "Red Cross Extra" (5")—is loaded. This dependable dynamite supplies the blasting power needed to keep job moving. It has considerable water resistance.

3. To improve fragmentation and control throw, Du Pont "MS" Delay Electric Blasting Caps are used. Nineteen different delay intervals are available, although only 8 were needed in this shot.

4. Blasting foreman fires the shot with a Du Pont CD-48 Blasting Machine. This machine will fire up to 1,200 holes and eliminates need for blasting generators and permanent firing lines.

5. Ready for blast, shot area is loaded with 4,600 lbs. of 50% "Red Cross Extra" dynamite in 176 two-inch and 43 six-inch holes. Rock broken in this blast will be used in fill shown in first picture.

6. Result of blast is 5,000 cubic yards of well-broken rock. In all, nearly 2½ million cubic yards of rock will be moved in this section of the Turnpike, with fills ranging to 150 feet in depth.

The dependable line of Du Pont explosive products and equipment is known and respected throughout the world. Why not see how you can benefit from it? Have your Du Pont representative answer your questions, or write E. I. du Pont de Nemours & Co. (Inc.), Explosives Department, Wilmington 98, Delaware.

DU PONT EXPLOSIVES

Blasting Supplies and Accessories

DU PONT

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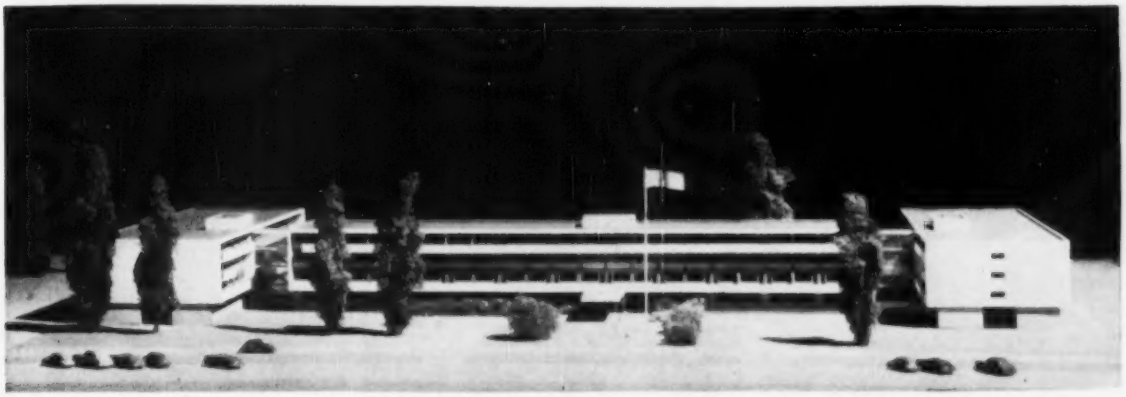
BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*



AIR TRAFFIC CENTER abroad offers quarters, recreation and processing for U. S. military travellers.

Army Builds Hotel-Processing Center

U. S. air base in Germany will provide a comfortable hotel atmosphere while travelers await their next move

Col. Marvin C. Ellison
Engineer, Northern Area Command
United States Army, Europe

Unusual design and construction features highlight a million-dollar hotel and processing center that will be completed this month at Rhine Main Air Base, Frankfurt/Main, Germany. Built by the Army, the dual-purpose facility not only provides quarters for the U. S. or Europe-bound air traveller, but also furnishes his processing and recreation needs.

Among the noteworthy features are elliptical concrete columns, perforated metal forms that are left in place, and lightweight building blocks that can be cut with a saw.

The Air Traffic Center, as it is called, is operated by the Army Transportation Corps and has a monthly processing capacity of 12,000. Within the center are hotel accommodations for the traveller as well as administrative space for his processing, clearance, plane bookings and customs inspections, the administrative space being provided on the main floor.

In-bound passengers are first assembled in an assembly room for briefing. Here, information necessary to acquaint the new arrival with Germany and processing requirements are provided. Processing stations located in the in-bound wing include: immunization, money exchange and customs inspections. Baggage may be claimed at the customs office where it has been delivered from the plane.

Out-bound passengers, usually quartered as a guest at the hotel, are assembled in another assembly room and are briefed on processing and flight information. Baggage is weighed and checked at the baggage reception desk and customs declared. Baggage flow will be from the baggage reception desk to the basement by elevator for storage, if necessary, or transported directly from truck to the plane.

• **Accent on comfort**—Hotel accommodations at the center are on a par with hotels in the Frankfurt area. There are 300 rooms on the second, third and fourth floors of the center. Each room shares a connecting bath with the adjacent one. A door is provided between alternate rooms for flexibility in assignment of guests.

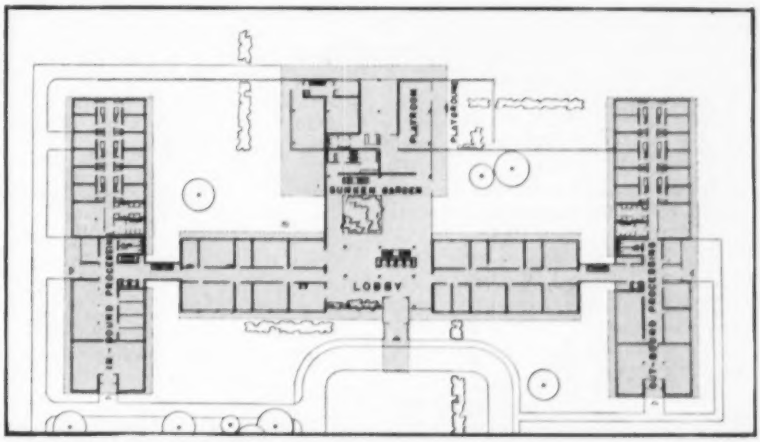
Balconies are constructed around the building on all floors, and the majority of sleeping rooms open onto a balcony.

The main lobby totals 2,500 sq ft. Concrete columns in the lobby are elliptical in cross-section, tapering from 30 in. across the major axis at the top to 20 in. at the bottom.

A glass-walled sunken garden between the lobby and the cafeteria provides natural light in the lobby and adds to the esthetic features of the building. A free-standing concrete stairway leads from the lobby to the cafeteria.

Nursery facilities are provided for children near the in-bound and out-bound assembly rooms and near the main lobby. A playroom for older children is located on the ground floor.

A well-lighted cafeteria of 4,900



FIRST-FLOOR PLAN locates inbound wing on the left, outbound on the right. Main lobby has an area of 2,500 sq ft. Sunken garden is glass-walled.

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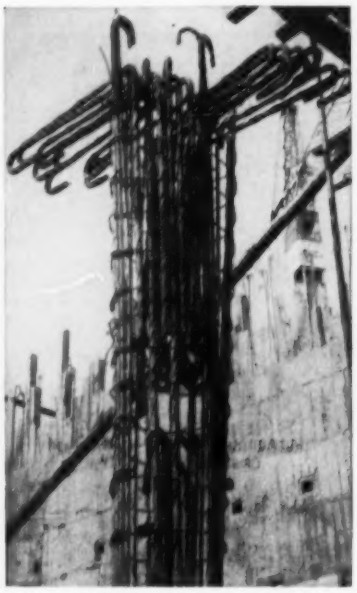
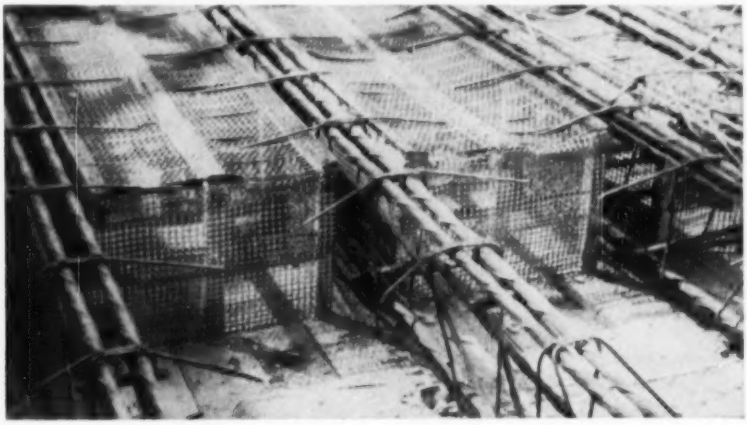


HEAVY BARS, tightly spaced, reinforce tapered elliptical columns in lobby.

BUILDING BLOCKS of lightweight concrete, developed abroad, are easily cut.



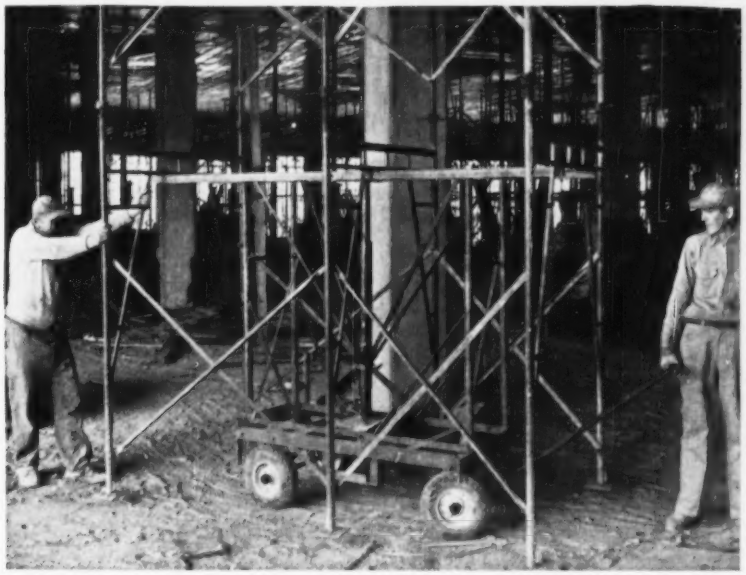
STEEL STAMPING WASTES nailed to wood frames were forms for floors of T-beam and waffle-type construction. A stiff concrete mix was used.

sq ft on the second floor is connected by a stairway to the main lobby. This cafeteria, with the ground-floor childrens' playroom under it, is separate from the main building.

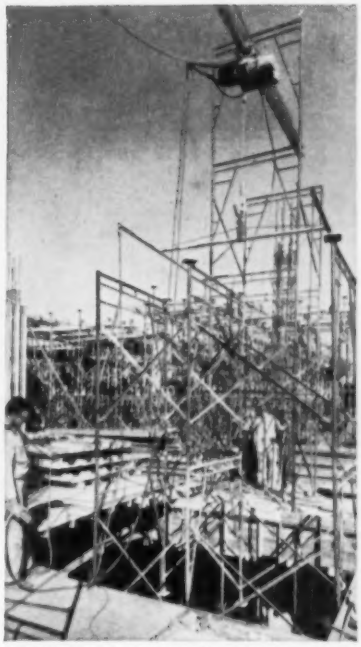
• **Basically a concrete building**—The principal construction combines walls of brick or pumice block, and an exterior reinforced concrete frame. The main lobby and the first floor hallway areas are exceptions to this in that the upper floors are supported by tapered elliptical reinforced concrete columns. Floors were cast-in-place and consist of one-way reinforced concrete ribs.

Concrete was manufactured on the site. Four concrete batching plants were constructed adjacent to a cement silo. Except for concretes of over 4,000 psi strength, the aggregates were measured by volume and the cement weighed by a semi-accurate method. Cement was delivered in bulk from the factory in tank trucks and blown into the silo for dispensing to the batching plant.

Various types of forms were used throughout the project. For the elliptical columns of the main lobby, for example, forms were made of a material similar to pressed wood and lined with linoleum. The inside of the forms was painted with a heavy coat of linseed oil, to provide collections of oil on vibration—thereby producing small surface voids. A large



HORIZONTAL movement of three, two-frame high section of "Trouble Saver" Shoring to new pour area on the same floor is done with dolly equipped with pneumatic wheels and hydraulic jack. PS Co. supplied 4,730 5"-wide, 6'6" high frames for this multi-level shoring job.



VERTICAL movement of same 30 sq. ft. "Trouble Saver" Shoring sections from floor to floor is accomplished with an electric hoist mounted on a monorail. Shoring sections are raised through escalator shafts and stairwells and released to a second dolly working that level. As shown, other "Trouble Saver" frames were used to support monorail.

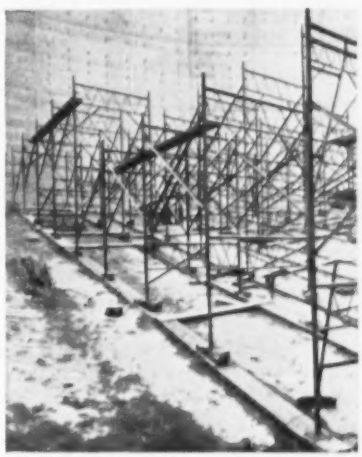
Sections of Steel Shoring Rolled, Lifted to Next Pour

IN ANAHEIM, CALIF., general contractor Ford J. Twaits Co. cut job time as much as 25 percent on the three-story, 330 ft. x 216 ft. Broadway-Hale department store by moving completely assembled sections of "Trouble Saver" Sectional Steel Shoring both horizontally and vertically. Here's how it was done:

(1) The 5 ft. wide "Trouble Saver" end frames and diagonal crossbraces, supplied by PS Co., were assembled on the ground floor of the building. Maximum spacing between frames was 5 ft. The load bearing strength of each section was more than adequate for supporting the 8 in.-thick floor slabs. (2) After pours, the 30 sq. ft. shoring sections were transported horizontally to new pour areas on dollies equipped with 14 in. pneumatic wheels and a hydraulic jack. (3) When the next story was ready, the shoring sections were wheeled to escalator shafts or stairwells and raised to the next floor by a monorail-mounted electric hoist. The sections were again set on a second dolly and wheeled to the next pour area. After pours, the shoring sections were lowered from the forms by means of 20 in. extension legs.

The fact that "Trouble Saver" Sectional Steel Shoring could be moved with a minimum disassembly and assembly permitted unusually big pours of 550 to 660 cu. yd. at rates up to 93 cu. yd. per hour.

Across the country at the Jersey City Sewage Treatment Works, Jersey City, N. J., Garden State Constructors and Associates showed further proof of the versatility of "Trouble Saver" Sectional Steel Shoring by using it to shore a 32 ft.-high x 12 in.-thick roof slab from a difficult, cone-shaped floor. The unusual floor condition was overcome by using end frames of various heights and doing the final, close leveling with the 20 in. adjustable legs atop frames. Detailed information on "Trouble Saver" Sectional Steel Shoring and other modern steel shoring methods can be found in Bulletin PSS-33, available at no obligation from The Patent Scaffolding Co., Inc.



CONICAL shaped floor of a 100' dia. digestion tank from which a 32'-high x 12"-thick concrete roof slab must be shored serves as base for "Trouble Saver" Sectional Steel Shoring. The floor dips to 12'6" below the bottom of the wall at the center. 2', 3', 4', 5' and 6'6"-high frames were used with standard braces for 5' spacing to provide level shoring. Rows of frames were placed 2'6" apart on braced wood sills. Garden State Constructors and Associates, general contractor.

To help you with your scaffolding and concrete shoring methods, PS offers a complete nation-wide engineering service available to you locally. See the Yellow Pages in your 'phone directory for the nearest Patent Scaffolding office or representative that sells and rents "Gold Medal" Scaffolds.

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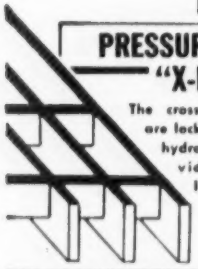

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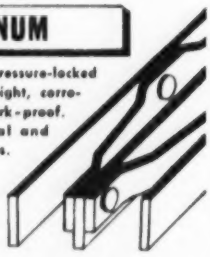

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mass of steel reinforcing was used to form the strong core of the tapered column.

• **Waste used for forms**—For the concrete floors, of T-beam and waffle-type construction, forms were made of industrial steel stamping wastes nailed to wood frames. These served as non-removable fillers between the reinforced concrete beams. The forms were then nailed to wood decking laid on shoring. The mix had to be carefully controlled to prevent the cement paste from seeping through the steel mesh. After the floor was completed a plaster ceiling was suspended below the concrete floor.

Four electrically powered cranes, operating on steel rails facilitated the handling of aggregate and other heavy materials. This equipment had a boom reach of 66 ft. For placing concrete, the cranes were equipped with a ¾-cu-yd bucket with sloping sides, which discharged through a scissor trapdoor.

• **Lightweight concrete blocks**—In construction of the building, extensive use was made of building blocks, named *Ytong*, based on a Swedish patent. This product is basically a gas-expended slag concrete, sometimes containing fillers. It is very light and porous, and is manufactured in sizes ranging from thin plates for composite walls to building blocks of sizes equal to standard concrete blocks. It is soft and easily worked with a mason's hammer, an ordinary hatchet or saw. The surface is rough and ideally suited for application of plaster. The interior walls of the building were constructed of two separate walls of *Ytong* blocks to provide a space for conduits, heating lines and insulation. These blocks, 10x18x10 in., were used also for the outside walls of the cafeteria, with plaster applied to the outside surface.

General supervision and administration of construction were by the German Government Construction Agency. The commanding general, Northern Area Command, was responsible for conformance of erection with design standards, plans and specifications. When the building is completed, it will become part of facilities at Rhine Main Air Base and eventually will revert to the German government along with the other air base facilities there.

Architect Otto Apel, Frankfurt/Main, designed the structure, and the general contractor for the project is Mueller Altvater & Co., Stuttgart, Germany.

German Group Gets Contract For Dam Project in Uruguay

A German group headed by Siemens-Schuckert Werke A. G. has been awarded a $28 million contract for construction of a dam and powerhouse on the Negro River in central Uruguay. Seventeen firms from ten countries submitted bids.

The project is located at Rincon de Baygorria, 40 mi downriver from the existing Rincon de Bonete power station.

The Baygorria plant will have a capacity of 102,600 kw utilizing three Kaplan-type low head turbines.

The contracting group includes: Siemens Schuckert Werke A. G., Siemens-Bauunion GmbH., Philipp-Holzman A. G. and Gruen and Bilfinger A. G., The Swedish firm Nydquist and Holm (NOHAB) will supply turbines; M.A.N. (Maschinenbau Augsburg-Nuernberg) sluices, and Firma Haushahn, cranes.

A condition of the contract is that the World Bank will grant a credit for payments which have to be made abroad. Assurances have been given that credit will be granted, but talks are continuing as to payment details.

Czechs Report Development Of Light Concrete Rail Ties

Prestressed concrete railroad ties, lighter in weight than contemporary types, and able to stand up under heavy usage, have been developed in communist-ruled Czechoslovakia, Russian news reports say.

According to technical reports published in Moscow, the new ties save 30% in concrete and 58% in steel as compared to Swiss, German and Belgian types that have been under test with the Czech product since 1951 on a railroad line near Prague.

The ties are described as two-hinged units, with a thin center and thicker end pieces. The center section is 90 millimeters (roughly 3 in.) high, the end sections, trapezoidal in shape, are 170 mm in height (6.63 in.). Tension is applied by two five-wire strands of 0.1755 in. dia, with a tension capacity of 16,500 kg per square centimeter. In addition, a mesh of welded wire is cast into the concrete. The sections connect by hinges of a plastic material to prevent cracking.

To date, the Russian report continues, 50,000 of these ties have been installed on the Czech railroad. Eventually, all wooden ties will be replaced by the concrete units.

(*International continued on page 91*)

Cleveland "Baby Digger" averages 3,500′ of 22″ x 36″ water line trench daily, digging in clay and rock

R. L. Eatherly of Carthage, Tenn. got good daily trench production with his Model 95 Cleveland "Baby Digger" on this water line contract in the Belshire Subdivision in Nashville. Averaging 3,500 feet per day, the Cleveland cut 4 miles of trench, 22 inches wide by 36 inches deep in curving roadways on a subsoil composed of clay with fairly heavy rock content. The Cleveland's completely unobstructed operator visibility and the convenient grouping and location of its controls for easy accurate digging were definite advantages in cutting the curved trench. Just another example of the outstanding ability of Cleveland Trenchers to *dig more trench . . . in more places . . . at less cost.*

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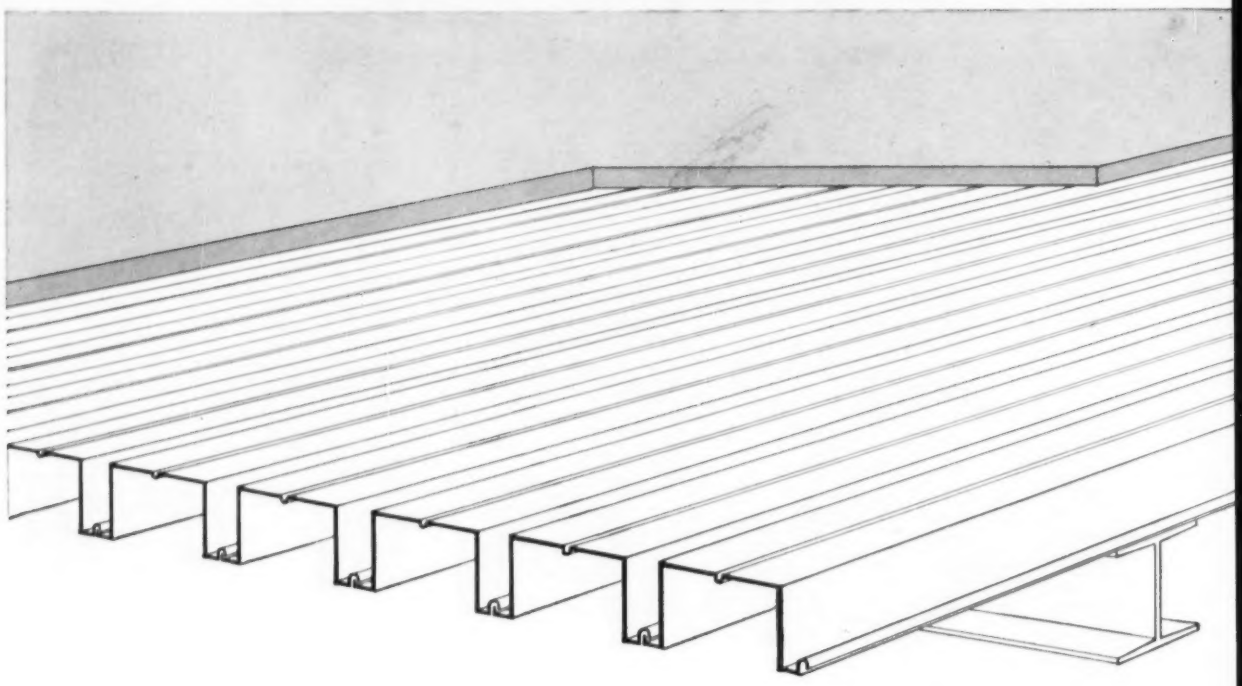

Fenestra "E" Deck spans up to

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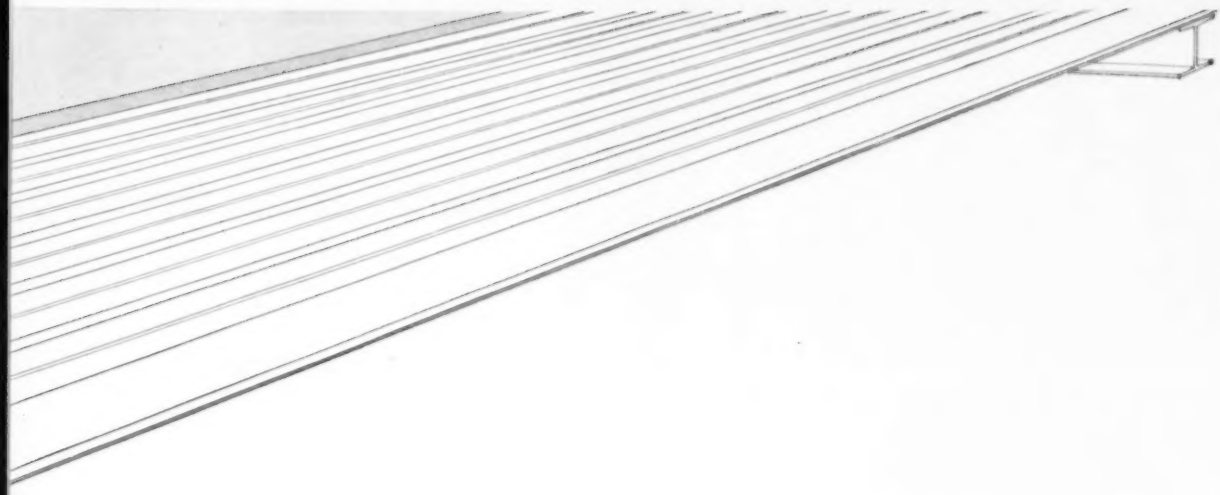
Covered walkways and canopies are economical with Fenestra "E" Deck. The long-span design and easy erection save time and costs. Try this use of low-cost Fenestra "E" Deck for your next building. Shown here is walkway at Window Rock Public School, Window Rock, Arizona. *Architect:* E. L. Varney, Phoenix, Arizona. *General Contractor:* M. M. Sundt Construction Company, Tucson, Arizona. *Panel Erection:* Chapman-Dyer Company, Tucson, Arizona.



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Don't let structural steel shortages slow down your buildings. Call your Fenestra representative today—he's listed in the Yellow Pages. He can help you change your plans to "E" Deck and arrange for fast delivery to your job. Mail the coupon below for your copy of the new Fenestra Building Panel catalog with complete engineering data on all Fenestra products, including "E" Deck.

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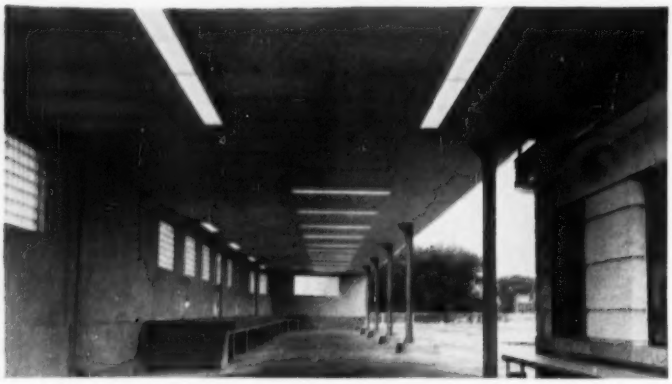

Moisture-resistant. K&M Apac sheets are used on the ceiling of this toll entrance and custom office inspection enclosure at the Port Huron, Michigan, Blue Water International Bridge. The moisture in the air at the bridge won't harm them.

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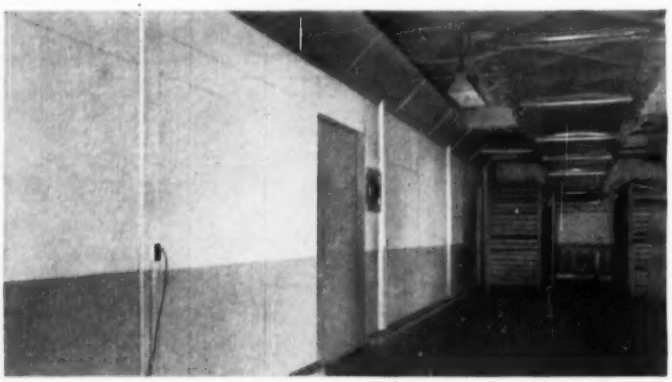

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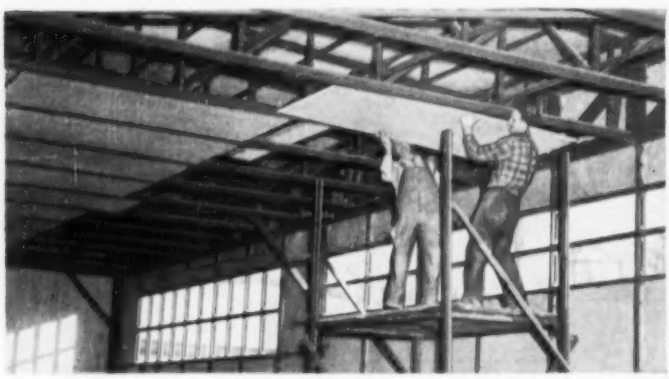

All-purpose sheets. This photo shows K&M Apac sheets being applied on a building where they are used for both outside and inside walls as well as for ceilings.

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Look over the illustrations. See a few of the many places where Apac sheets are applied. Then contact your K&M distributor, and ask him to tell you more about low-cost K&M Apac sheets. Informative folders also available on request. Address inquiries to our headquarters in Ambler, Pa.

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Terminal in the Air

New air terminal begun; it's 20 ft off the ground

Work gets underway this month for a new downtown air terminal for London.

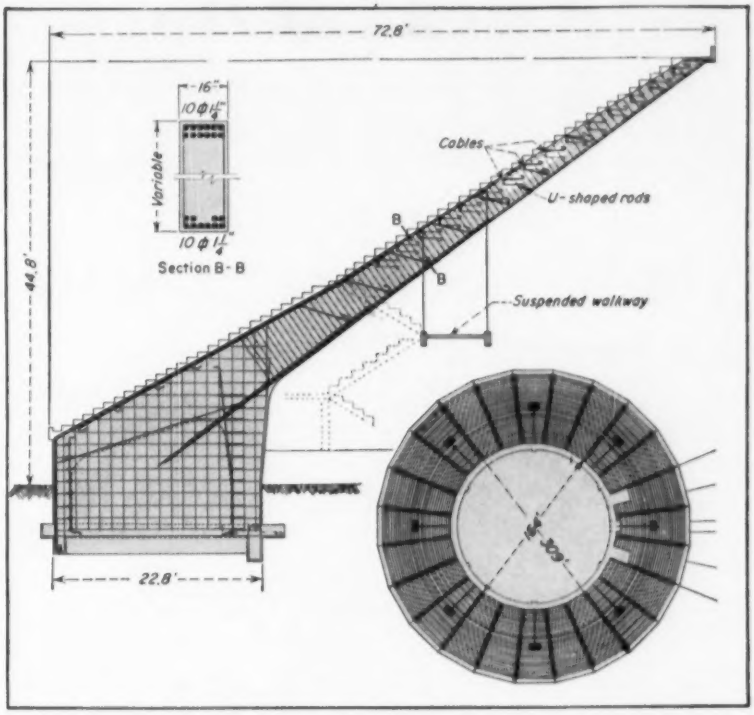
The new facility, scheduled for completion in 1960, will be built 20 ft in the air above Earl's Court, a triangular site of intersection of the city's subway lines.

The future building will rest on a steel and concrete platform that is 75,000 sq ft in area, weighs 3,500 tons, and is supported by eighty steel columns. The columns, in turn, transmit their loads to 15-ft square concrete foundations.

London Transport, a municipal transportation agency, will handle construction for the first 15 months. The platform will then be turned over to Air Terminals Limited, a company formed by British European Airways Limited, British Overseas Airways Corporation and Aer Lingus who are financing the project.

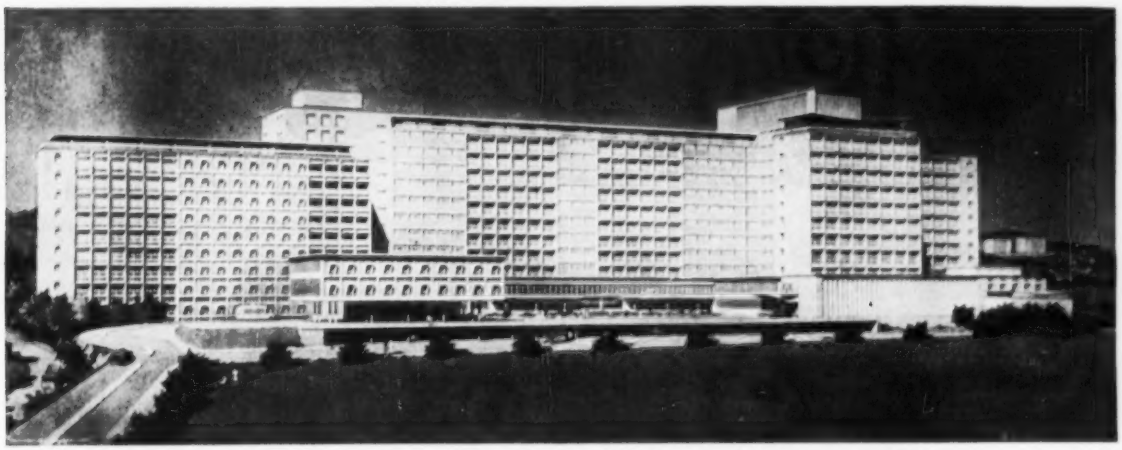
With an administrative office block alongside it, the completed group of buildings will become London's central air terminal for use by all airlines having services operating out of London Airport.

The development is planned to include shops, a basement car park and possibly a movie theatre.



Periphery Cable Keeps Bullring Stable

Concrete stands of a unique cable-cantilever design are now being built for a large bullring in Cali, Colombia, S. A. Designed to hold 20,000 spectators, the 309-ft dia, 24-sided bowl consists of concrete bleachers that cantilever 50 ft (radially) outward around its periphery. The main support for the polygon bowl comes from two sources: (1) 24 reinforced concrete ribs that reach 50 ft radially outward from a 23-ft long, 10-in. deep base slab, and (2) 15 rings of post-tensioned cables, in pairs that



Hong Kong Area to Get Giant 1,275 Bed Hospital

Plans have been approved for an $8.6-million hospital in the Hong Kong area to be completed by 1960, and is said to be the biggest of its kind in the British Commonwealth.

Contruction of the 13-story government-owned building will begin in mid-1957. It is to be built in Kowloon, a peninsula opposite Hong Kong island.

The new hospital will have 1,275 beds and 51 ward units. There is provision for a special childrens' section containing 200 beds. In addition there will be sisters' and nurses' quarters (with a nurses' training school), X-ray rooms, isotope laboratories and treatment rooms, occupational and physiotherapy rooms.

Working drawings are now being prepared by the architectural office of the local public works department. Construction work will be let out on contract to local firms. Design of the structure has been executed by British architects, Easton & Robertson of London.

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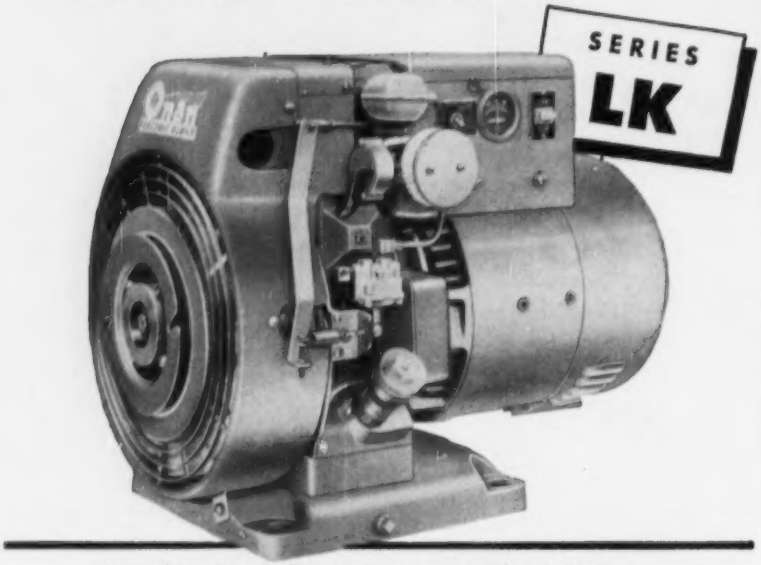
is the word for this

New ONAN 2-KW Electric Plant



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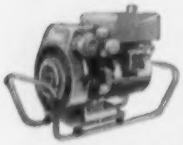

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Built to do the job where other units won't stand up! This new 2,000-watt, A.C., 115 or 230-volt, gasoline-driven Onan plant can take all kinds of punishment and come back for more. It's powered by a husky, Onan 4-cycle, single-cylinder, engine with Stellite-faced rotating exhaust valve, larger longer-wearing bearings, and efficient, trouble-free air-cooling. The Onan-built generator is direct-connected, permanently aligned, and fully-protected for use under all climatic conditions.

The Onan "LK" is compact too . . . requiring less than 3 square feet of floor space. Heavy-duty construction throughout . . . yet it weighs only 235 pounds. In carrying frame or dolly-mounted it can be taken anywhere and is easily moved around on the job.

The rating of 2,000 watts is conservative, allowing ample overload. Fuel consumption at full rated load is less than one quart of gasoline per kilowatt hour, making the "LK" a low-cost source of primary power. Recoil rope starter on models for portable use; electric starting available for stationary installations; automatic controls for emergency standby use.

Wide range of accessories available

Write today for special "LK" folder!

D. W. ONAN & SONS INC.

Onan ELECTRIC PLANTS

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circle the upper half of the cantilever, continuous around the structure.

Live load is carried by the action of the cantilever ribs, while dead load is carried by the cables. Each cable consists of 12 to 20 strands of 0.2-in. wire placed in 1¼-in. dia tubes. U-shaped rods anchor the cables in each rib, restraining radially inward movement.

Provision for expansion and contraction has been made by placing straight-cut openings at every third section. Location of joints corresponds to center of each entrance port.

Engineering and design is by Guillermo Gonzalez-Zuleta, Bogata, for the owner, Plaza de Toros de Cali.

Bridge Congress to Meet In Lisbon This Summer

The Fifth Congress of the International Association for Bridge and Structural Engineering will meet in Lisbon, Portugal, June 25-July 2.

There will be six working sessions on the following subjects: (1) Loading and strength of bridges and structures; (2) slabs and various curved structures in reinforced concrete; (3) welded steel structures; (4) structures in steel and light alloys; (5) special problems of reinforced and prestressed concrete; and (6) practice of reinforced and prestressed concrete.

For each of the sessions there will be a general reporter who will present a brief of the information and proposals in the written papers submitted. John I. Parcel, consulting engineer of St. Louis, is the general reporter for Session 4.

For further information, address Secretariat de'Apic, Ecole Polytechnique Federale, Zurich, Suisse.

1960 Is Set as Target Date For Rome Subway Extension

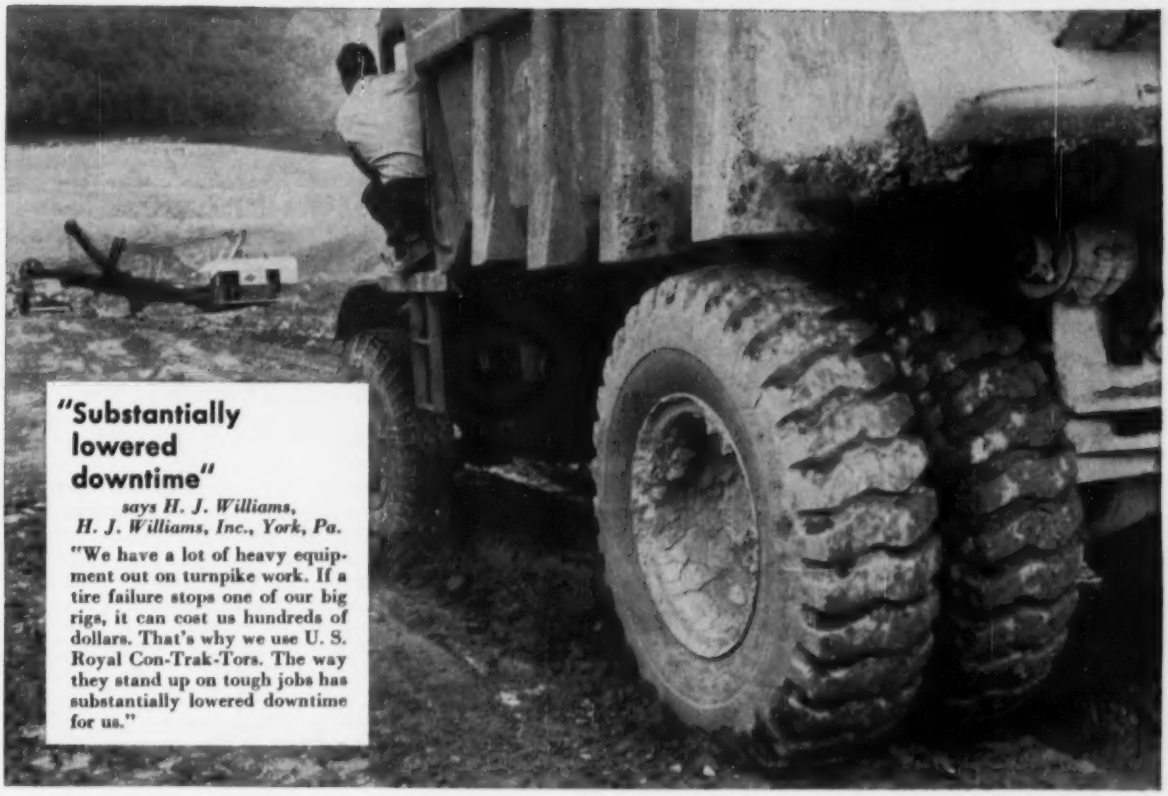
Italy's Ministry of Transports—preparing for the 1960 Olympic Games in Rome—is pushing plans for adding an $80-million trunk to the new Rome subway.

Detailed plans call for the new 6.8-mi subway section to connect Rome's Central Railway Depot with the eastern outskirts of the city, where Olympic sports fields have been prepared. The first 5.6-mi subway stretch, opened last year, links depot with suburban districts to the west of the city.

The new trunk will have a third rail instead of the trolley that is used on the subway now in operation. This will permit savings on the estimated $4-million-per-kilometer cost.

(*International continued on page 94*)

Costly Downtime Drops!


"Substantially lowered downtime"
says H. J. Williams, H. J. Williams, Inc., York, Pa.
"We have a lot of heavy equipment out on turnpike work. If a tire failure stops one of our big rigs, it can cost us hundreds of dollars. That's why we use U. S. Royal Con-Trak-Tors. The way they stand up on tough jobs has substantially lowered downtime for us."

Approach to south portal of T. J. Evans Tunnel, on the Pennsylvania Turnpike near Allentown.

U.S. ROYAL NYLON CON-TRAK-TOR FULL LUG

If, like Mr. Williams, you use heavy-duty trucks, you can reduce your equipment downtime and your operating cost with the U. S. Royal Con-Trak-Tor. Here is why.

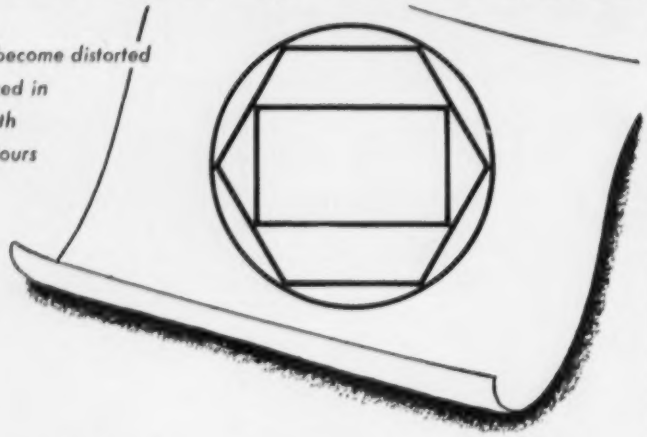
This tire's *Nylon cord carcass* stands up to vicious shocks, fights off sharp rocks and snags. It has *triple impact protection*—extra cushioning rubber between plies, double shockpads under the tread, extra-tough construction at the crown. Its *full-lug traction* pulls right through toughest going, reduces sideslip to an absolute minimum, just won't bog down.

Your U. S. Royal Dealer now has the U. S. Royal Con-Trak-Tor in your size. Have him put it on your wheels—and prove to yourself why men like H. J. Williams report that both downtime rates and operating costs *drop* with this great tire!

US RUBBER **United States Rubber**

The Strange Case of the DISTORTION of CONTOURS

Contours become distorted when placed in contact with other contours



Arkwright Tracing Cloth Produces Contours in Clear, Clean Lines

ARCHITECTS, ENGINEERS, DESIGNERS AND DRAFTSMEN are placing great projects on Arkwright because of these three important qualities:

1. SPEEDIER DRAFTING — Arkwright withstands repeated erasure and re-inking without feathering. Its exceptional finish is free of pin holes and thick threads which cause blobbing.
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3. SHARPER PRINTS — Arkwright's high transparency means clean, sharp reproduction, exceptional for detail work.

WRITE FOR FREE SAMPLES. See why, throughout America, more Arkwright made tracing cloth is sold than all other domestic makes combined. Use the rolls with the blue line that identifies "America's Standard." Arkwright Finishing Co., Industrial National Bank Building, Providence, R. I.

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. . . International

Milan-to-Naples Speedway Will Get An April Start

Construction of the 460-mi Milan-Naples speedway is expected to be under way by April.

The project—largest in a series of national speedways authorized by Italy last May—will be built by a government company belonging to the IRI group. A government grant will take care of about 40% of the cost, which is estimated at some $300 million. The rest of the money will be obtained by a bond issue.

The speedway will consist of two 24-ft roadways separated by a center strip. By following a more convenient route than the existing road, the new highway will cut down the distance between Milan and Naples by some 50 miles.

The project will be built in several stages. The first phase will be carried out at Naples, and from Milan to Bologna and Florence. It is estimated that each of the sections will take from three to four years to complete. And the entire road is expected to be opened to traffic some six years after a start has been made on the last stretch.

Meanwhile, plans for other speedways are progressing. An agreement signed for construction of the Milan-Genoa speedway calls for the government to make a grant of 20%—or $5.5-million—on a total estimated cost of $27 million. In addition, plans for obtaining rights-of-way for the Naples-Bari speedway have been completed and plans for the Brescia-Padua speedway are under study.

$138 Million Road Program For Construction in B. C.

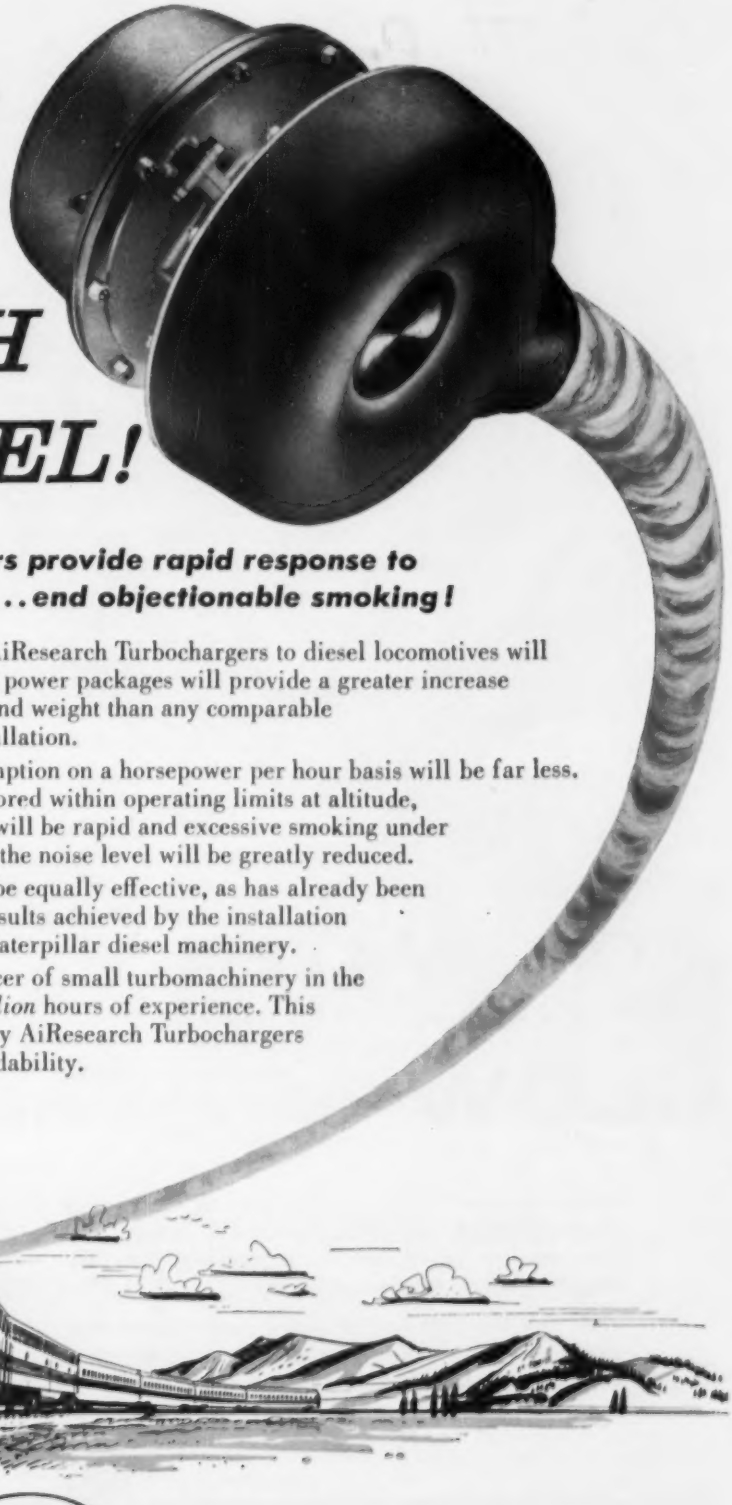
The government of British Columbia will spend $138 million for construction on highways, bridges and maintenance work this year.

Highlight of the program will be a $30-million tunnel under the Fraser River linking metropolitan Vancouver to an express highway to the United States border.

Main construction will center along the Trans-Canada Highway with 104.6 mi being undertaken this year, making a total of 150 mi under construction between Vancouver and Revelstoke.

Announcing the program, Highway Minister P. A. Gaglardi added that major provincial roads to be developed will be the southern and northern transprovincial highways and access roads into northern British Columbia. These will open up timber and mining areas hitherto inaccessible.

MORE PULL WITH LESS FUEL!



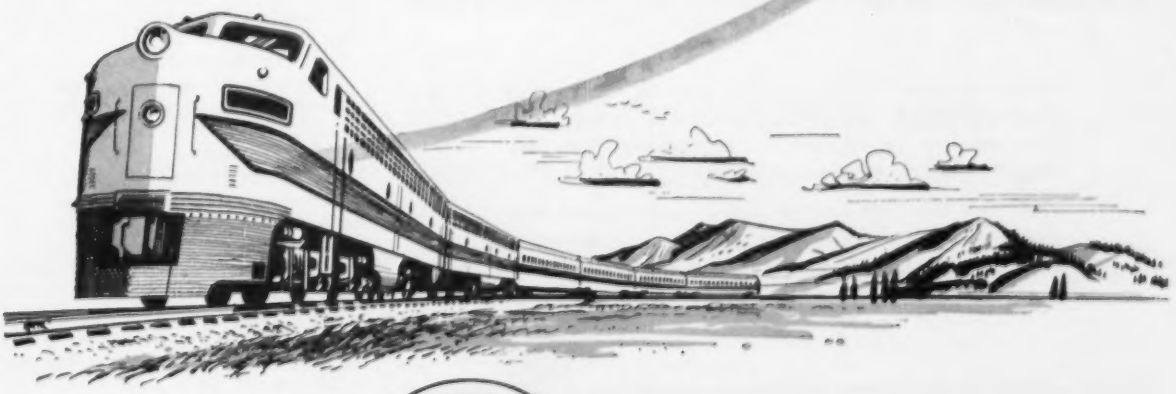
AiResearch Turbochargers provide rapid response to acceleration demands... end objectionable smoking!

Consider what the application of AiResearch Turbochargers to diesel locomotives will accomplish: A team of these small power packages will provide a greater increase in power at smaller cost in space and weight than any comparable turbocharger or supercharger installation.

In addition, specific fuel consumption on a horsepower per hour basis will be far less. Sea level performance will be restored within operating limits at altitude, response to acceleration demands will be rapid and excessive smoking under operating power eliminated. Also, the noise level will be greatly reduced.

Application in other fields will be equally effective, as has already been demonstrated in the remarkable results achieved by the installation of AiResearch Turbochargers on Caterpillar diesel machinery.

AiResearch is the largest producer of small turbomachinery in the United States, with twenty-five *million* hours of experience. This unmatched experience explains why AiResearch Turbochargers lead in power, economy and dependability.
Your inquiries are invited.



THE GARRETT CORPORATION

AiResearch Industrial Division

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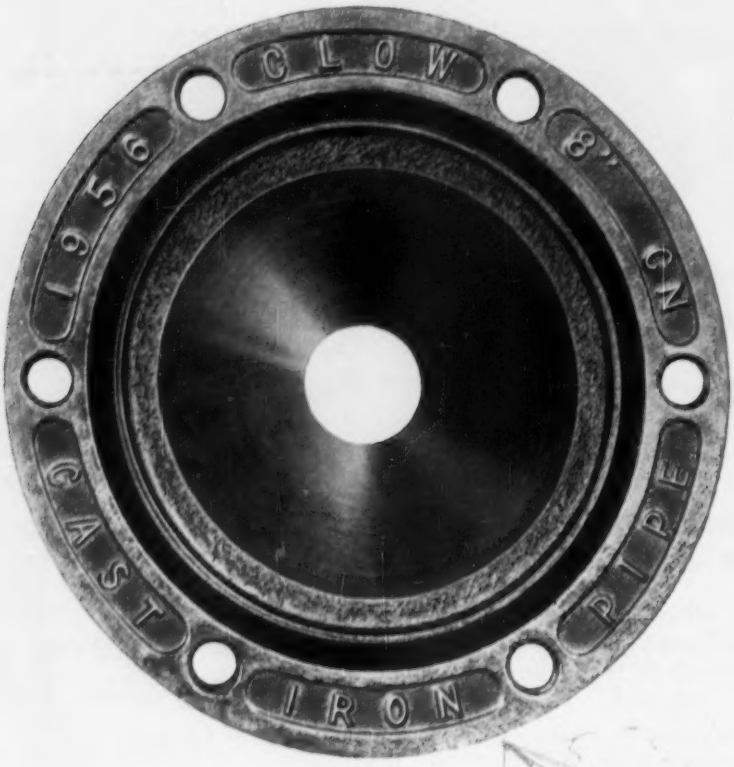

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CLOW Mechanical Joint **Cast Iron Pipe**

Clow mechanical joint cast iron pipe is your logical choice for piping water underground. It is easy and economical to install, and can be depended upon for safe, trouble-free, permanent service.

Clow cast iron pipe exceeds the physical requirements of all currently approved specifications. Pipe foundries at Coshocton, Ohio and Birmingham, Alabama. Emergency stocks at Chicago, Dallas, and Oskaloosa, Iowa.

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Books

Advanced Surveying

SURVEYING FOR CIVIL ENGINEERS—A roundup of advanced and difficult surveying methods by Philip Kissam, 716 pp. McGraw-Hill Book Co., Inc., 330 W 42 St., New York 36, N. Y. $8.50.

Mr. Kissam, professor of civil engineering at Princeton University, has done an excellent job in demonstrating advanced types of surveying procedures and the newest in equipment and techniques. The book is aimed both at practitioners and students.

Emphasis has been placed on the theory of errors and the adjustment of survey nets. Six chapters have been devoted to errors, probability, least squares and precise level nets, triangulation and traverse nets.

The first third of the book is organized by functions, viz., horizontal and angular measurement, control surveys, topo surveys, etc., and can be used as the basis for an advanced course. The remainder of the book is organized by types of surveys, including celestial, boundary, public land, city, mine, hydrographic and bridge and tunnel. Details of operation are covered in the type of survey where they are most applicable.

P. E. Exam Review

PROFESSIONAL ENGINEER'S EXAMINATION QUESTIONS AND ANSWERS—By William S. LaLonde, Jr., 462 pp. McGraw-Hill Book Co., New York 36, N. Y. $6.50.

A single volume intended to help all who aspire to pass professional engineer or land surveyor licensing examinations, this book should be useful regardless of the branch of engineering, or the part of the country in which the aspirant takes the exam.

There are sample questions and approved answers in all the engineering branches; all may be assumed to represent the most rigorous of written examinations given in any state.

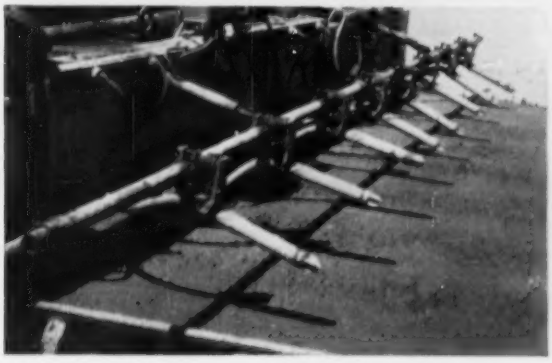
There is some information presented on the various individual state requirements for license; there are addresses listed from which full details could be obtained.

Circumstances or requirements often make it necessary for the seeker of a license to take at least part of the total written exam quite some time after leaving college. Where review courses are available they can be most helpful. As a text for such courses, and for the majority to whom no review course is available, this book provides a fine review.

(*Books continued on page 101*)

WITH 3 PAVERS WORKING, one Jaeger spreader-finisher "team" completed 5400 lin. ft. of 20 ft. slab in one 20-hour day.

THESE TWO JAEGER-LAKEWOOD FINISHERS and a Koehring longitudinal float followed a Jaeger screw spreader. Adjacent slab surface had been cleaned with a blade.



BOTH SPREADERS were equipped for deep vibration.

7400 feet of 14″ x 20′ concrete slab . . .

one day's production with 2 Jaeger paving "teams"

1½ MILLION sq. yds. of slab 13″ and 14″ thick is a lot of concrete paving. To produce, place and finish it at the new Plattsburg, N. Y. Air Force Base, the two contractors operated 5 pavers and 2 Jaeger paving teams. Each "team" consisted of a Jaeger screw spreader with vibratory equipment and 2 Jaeger-Lakewood finishers, followed by the usual floats. The mix was 1½″ slump, increased to 2″ in hottest weather.

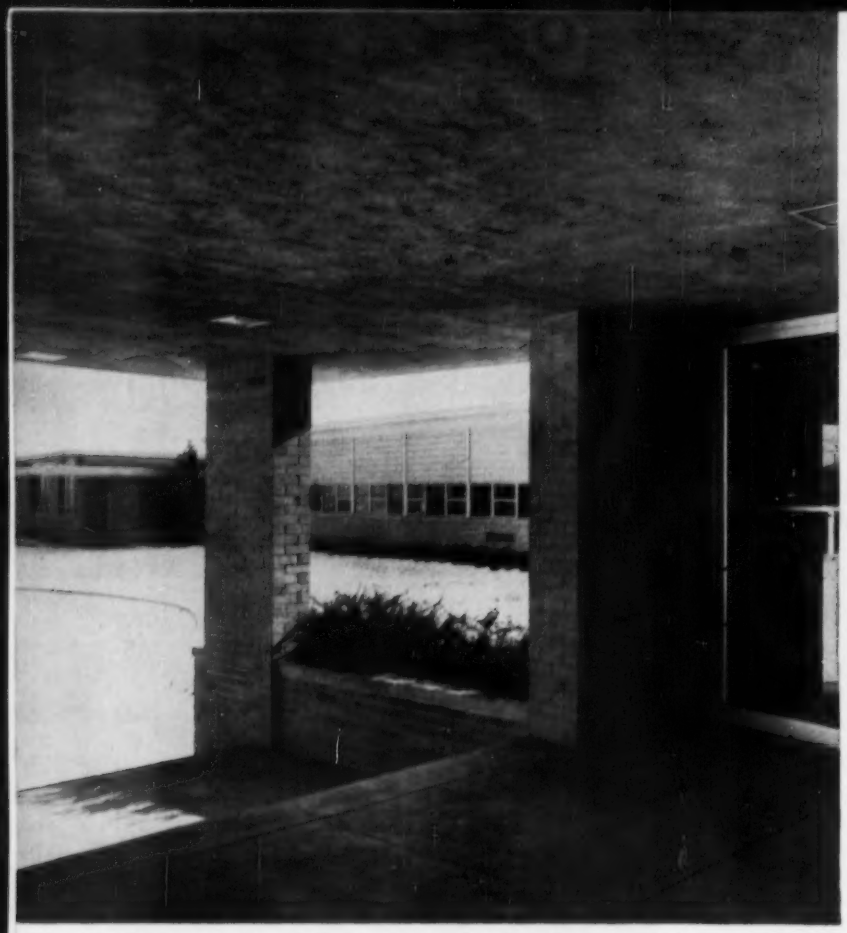
On the Winkelman-Tomkins-Jones joint venture contract, requiring 387,600 cu. yds. of concrete, 2 shifts per day were worked with 3 pavers ahead of a Jaeger spreader-finisher "team". An additional paver and duplicate finishing equipment were kept on hand to maintain paving continuity during lane changes. Daily production was from 3500 up to 5400 lineal ft. of 20′ slab, 14″ thick. Bero Construction Corp.'s contract (165,000 cu. yds.) was handled in 10-hour single shifts with 2 pavers ahead of a Jaeger "team". In spite of difficulty in hauling materials to pavers over sand, daily production reached as high as 2000 lin. ft. (200 ft. per hour).

• **For full information** on Jaeger concrete spreaders and finishers, or aggregate spreaders, ask your Jaeger distributor or write us for catalog.

THE JAEGER MACHINE COMPANY

200 Dublin Avenue, Columbus 16, Ohio

AIR COMPRESSORS • PUMPS • CONCRETE MIXERS • TRUCK MIXERS • LOADERS



In Pennsylvania—Monroeville Junior High School. Architect—Walter E. Schardt, Pittsburgh; Consulting Engineer—Leland W. Cook, Pittsburgh; Contractor—Guy Miller Company, Pittock, Pa.

New Buildings Go Up Faster At Lower Cost With Steeltex®

Across The Nation, Designers And Contractors Use Pittsburgh Steeltex Because It Saves Money

In Daly City, Calif. . . . down in Austin, Tex. . . . at Monroeville, Pa. . . . in Hagerstown, Md., Pittsburgh Steeltex is:

- **Helping build better, stronger** buildings of all kinds.
- **Cutting construction costs**—"five per cent," said one builder; "five cents per square foot," said another.
- **Shortening building time**—"we saved six weeks," said the builder in California.

Steeltex, the sturdy steel wire mesh reinforcing which carries its waterproofed form right on its back, was the choice of the men who designed and constructed the representative buildings on these pages. They agree Steeltex does a better job at lower cost.

In California—Westlake Shopping Center's J. C. Penney Company Department Store in Daly City. Architect & Engineers—Lloyd Gartner, A.I.A. and Associates of San Francisco; Contractor and Owner—Henry Doelger Builder, Inc., of Daly City.

J. C. Penney Company Store in Daly City, Calif., (lower left) is a totally fireproof department store with 93,350 square feet in its basement, first floor and second floor. The architect said:

"The facility and speed with which Steeltex Floor Lath was installed and the whole operation was completed resulted in a saving of many weeks of valuable construction time."

Henry Doelger Builder, Inc., builder and owner of the Westlake Shopping Center which includes the J. C. Penney store, credits Steeltex with "about six weeks saving in time and about five per cent in cost."

Monroeville Junior High School, near Pittsburgh (upper left) used approximately 110,000 square feet on floor slabs with the contractor, Guy Miller Company, declaring:

"At a conservative estimate, 1½ cents per square foot was saved in time and material as a result of using Steeltex instead of other methods."

The American National Bank Of Austin, Tex., (upper right) used about 7,000 square feet of Steeltex. Contractor J. M. Odom said: "On steel joist spans under 25 feet with a spacing of not over 32 inches we save approximately five cents per square foot over most other types of deck."

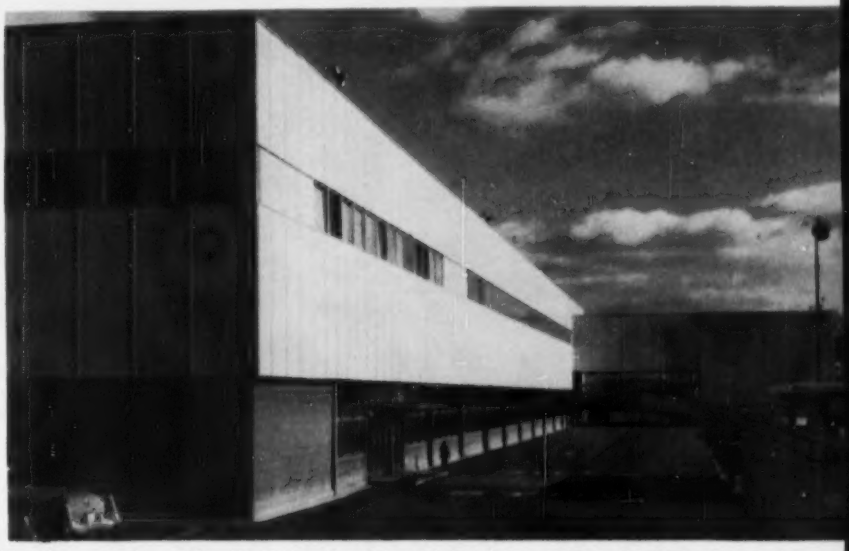
Fairchild Aircraft Division, Office Building, Fairchild Engine and Airplane Corp., at Hagerstown, Md., (lower right) Steeltex was used for 46,000 square feet of office space. The architect estimated "a Steeltex-supported slab over bar joists, spaced 24 inches on center, to be 40 to 45 per cent less expensive than a conventional four-inch reinforced slab using wooden forms, and over steel beams, six to eight feet on center."

Peter A. Strobel of the consulting engineering firm of Strobel and Salzman said the savings due to the use of Steeltex on the Fairchild building "are quite substantial and, according to our estimate, vary between $.40 to $.70 per square foot."

The Steeltex story is the same in the East, West, North or South. Designers and builders favor Steeltex because it makes better roofs and floors and speeds construction.

You, too, can benefit from Steeltex's advantages. For more details on the Steeltex story, write for the new booklet "Steeltex, Backbone of Concrete, Plaster and Mortar." Or call the nearest district sales office to learn how you can do a better job in less time when you use Steeltex.

In Texas—American National Bank of Austin, Tex. Architect—Kuehne, Brooks and Barr, of Austin; Contractor—J. M. Odom of Austin.



In Maryland—Office Building for Aircraft Division of Fairchild Engine and Airplane Corp. in Hagerstown, Md. Architect—Fordyce & Hamby, New York City; Consulting Engineer—Strobel & Salzman, New York City; Contractor—Calabro Construction Co., Inc., Linden, N. J.

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The feet* here are piers used to support Harry Street Bridge, Wichita Kansas. Inland Construction Co., Contr.

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Answer: Use a **STANG WELLPOINT SYSTEM**

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Miscellaneous Notes

• **Papers presented** at a symposium on "Altering Soil Properties with Chemicals", which was held in connection with the annual meeting in Cincinnati in April, 1955, are now available as a reprint from Industrial and Engineering Chemistry (1155 16th St., N.W., Washington 6, D. C.) at $1.50 a copy.

• **The 1955 edition** of "Bibliography on Prestressed Concrete" is available from the American Concrete Institute, 18263 West McNichols Road, Detroit 19, Mich., for $2.00. Purchasers of the 1954 edition can get the additions made this year in a supplement that sells for 35 cents.

• **Design data** for wire mesh reinforcement in concrete are given in "Design Manual for Welded Wire Fabric for Building Construction," which may be obtained free from the Wire Reinforcement Institute, Inc., National Press Building, Washington 4, D. C. The 45-page pamphlet also incorporates pertinent extracts from nationally recognized specifications and building codes. In addition, it gives useful information on applications of wire fabric in gypsum roofs, terrazzo floors, slabs on ground, and concrete made with several types of aggregates.

• **A Spanish language edition** of "Standard Methods for Examination of Water, Sewage and Industrial Wastes" (Tenth Edition) is nearing completion and soon will be available for distribution. Copies can be obtained from Trois E. Johnson, Chief, HW&H Field Party, Institute of Inter-American Affairs, American Embassy, Mexico City, D. F., Mexico, for $6.00 U. S. currency.

• **A "Translation Monthly"** now is being issued by the Special Libraries Association in which it lists the new translations of engineering and scientific articles in foreign publications as they are added to the association's Translation Pool each month. Copies can be obtained from the SLA Translation Pool, The John Crerar Library, 86 Randolph St., Chicago 1, Ill., for $5.00 a year.

• **The Reinforced Concrete Research Council** of the Engineering Foundation has begun the reprint of engineering school bulletins and technical society papers in its field of activity. The first to be issued are as follows: Bulletin No. 1, A Study of Combined Bending and Axial Load in Reinforced Concrete Members; No. 2, Inelastic Behavior of Eccentrically Loaded Short Reinforced Columns; No. 3, What Do We Know About Diagonal Tension and Web Reinforcement in Concrete; No. 4, Yield-Line Theory for Ultimate Flexure Strength of Reinforced Concrete Slabs; No. 5, Shearing Strength of Reinforced Concrete Column Footings. Copies can be obtained from R. F. Blanks, 510 Denver National Bldg., Denver, Col., at $0.50 each.

New Engineering Books

DAVIS DAM AND POWER PLANT—Technical Record of Design and Construction. Compiled by the Bureau of Reclamation. 414 pp. For sale by the Superintendent of Documents, Washington 25, D. C. $3.25

STRUCTURAL SHOP DRAFTING—Volume 3. 522 pp. American Institute of Steel Construction, 101 Park Ave., New York 17, N. Y. $3.00

ITALY BUILDS: Its Modern Architecture and Native Inheritance—By G. E. Kidder Smith, 264 pp. Reinhold Publishing Co., 430 Park Ave., New York, N. Y. $10.00

ARCHITECTURAL ENGINEERING—A compiliation of articles from "Architectural Record", 494 pp. F. W. Dodge Corp., 119 West 40th St., New York 18, N. Y. $11.50

ARCHITECTURAL BEAUTY IN JAPAN—By K. B. Shinkokai, S. Horiguchi, and Y. Kojiro, 164 pp. The Society for International Cultural Relations, Tokyo, Japan.

Reports and Pamphlets

STANDARD RULES FOR FIELD WELDING OF STEEL STORAGE TANKS—American Welding Society, 33 West 39th Street, New York 18, N. Y. $1.00

FLOOD PROBLEMS AND THEIR SOLUTION THROUGH URBAN PLANNING PROGRAMS—Tennessee State Planning Commission, Cordell Hull Bldg., Nashville 3, Tenn. $1.00

SOIL AND SOIL-AGGREGATE STABILIZATION—A Symposium—Bulletin 108, Highway Research Board, 2101 Constitution Ave., Washington 25, D. C. $3.00

MODERN HIGHWAYS FOR MICHIGAN—Prepared by the Automotive Foundation, 200 Ring Bldg., Washington 6, D. C.

TRAFFIC ENGINEERING—Its Role in Safe and Efficient Operation of Streets and Highways—By D. Grant Mickle. Automotive Safety Foundation, 200 Ring Bldg., Washington 6, D. C.

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Cookson steel or aluminum Rolling Service Doors and Servire Fire Doors
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(Advertisement)

WORKMEN ARE SHOWN vibrating concrete in thin-shell precast roof panels using Viber Model PX pneumatic vibrator mounted on screed.

Contractor Casts 2-Inch Reinforced Roof Panels with Special Screed Using Viber Standard External Vibrator

● **Contractor for more than** 740 precast, thin-shell roof panels for an earthquake resistant reservoir at the new San Pablo Filter Plant, El Cerrito, Calif., devised an efficient method of vibrating reinforced concrete webs only 2 inches thick.

P. Grassi-American Terrazzo Co., San Francisco, developed a screed on which a Viber standard Model PX pneumatic high speed vibrator was mounted. Thus concrete was screeded and vibrated in one operation.

Precast panels were 24 ft. long by 4 ft. wide with webs 2 in. thick. In addition to being thin in section, webs were reinforced with welded wire fabric making these areas virtually inaccessible to internal vibration. This made external vibration necessary.

Following proper curing, panels were hoisted by crane and placed on girders also precast by the contractor. Dimensional accuracy of precast panels was good, facilitating placement which was done at the rate of 10 panels in less than one hour. Panels were then welded to inserts in girders to make structure solid.

Viber's Model PX concrete vibrator selected by the P. Grassi-American Terrazzo Co. is used widely in pipe yards and tunnel lining operations wherever reusable steel forms are set up for use on a production basis.

For further information on Viber's complete line of internal and external vibrators, contact your authorized distributor or Viber Company, Dept. 7-A, 726 South Flower Street, Burbank, Calif.

PRECAST ROOF PANELS shown welded in place were set on girders by truck-crane. Channel side is 8 inches deep and has shelf to retain grout seal.

VIBER

CONCRETE VIBRATORS SINCE 1931

Legal

No Warranty Old Structure Will Support an Addition

A contractor who changes an existing structure according to prepared plans does not guarantee the completed structure will serve its purpose or the old one will support the addition.

Last year, a Texas contractor put a heavier steel water tank on an existing tower. The tower collapsed four months after the work was done. There was no evidence that the contractor's work was defective. In a damage suit against the contractor, the owner was denied recovery.[1]

According to the court "the true rule governing the instant case is that where a builder, who has been engaged to superadd to a structure already built, completes his work as contracted, according to plans agreed upon, he is not responsible for the subsequent destruction of the building caused by its own inherent weakness."

(1) Our Lady of Victory College and Academy v. Maxwell Steel Co., 278 S. W. 2d 321, Court of Civil Appeals of Texas, May 13, 1955.

Contractor Not Liable If Plans Are Defective

In the absence of any express warranty or negligence on his part, a contractor is not liable for defects flowing directly from specifications.

Last year in Mississippi, for example, a contractor was sued for damages claimed to have been suffered as a result of the faulty installation of a gas operated steam generator which caused an explosion in the chimney. A recovery was denied, as the evidence showed that the work was done in accordance with plans and specifications prepared by the architect. The work, as done, was approved by the architect. The judgment was affirmed on appeal.[1]

According to the appellate court, "The law has become well settled, in practically every American jurisdiction in which the matter has been involved, that a construction contractor who has followed plans and specifications furnished by the contractee, his architect or engineer, and which have proved to be defective or insufficient, will not be responsible to the contractee for loss or damage which results solely from the defective or insufficient plans or specifications, in the absence of negligence on the contractor's part, or any express warranty by him as to their being sufficient or

Dart 140-TC truck with Allis-Chalmers 8DAS-1125 supercharged diesel being loaded by a shovel powered by an Allis-Chalmers 6DCS-1879 supercharged diesel.

Fifty-five ton Dart truck powered by Allis-Chalmers 8DAS-1125 supercharged diesel dumping over edge of spoil bank that is approximately 500 ft high.

DIESEL ENGINES AVERAGE 5,000 HOURS BEFORE OVERHAULS

Allis-Chalmers Buda Division truck engines powering 24 Dart and Euclid trucks help keep production flowing smoothly at the Bagdad Copper Corp. mine under extremely demanding conditions. These trucks work two shifts a day, six days a week, hauling out both overburden and ore. The haul covers about 7/10 mile, up a grade which starts at 12 percent and quickly increases to 18 percent, with five torturous switchback turns. Thick, abrasive dust adds still further to the grueling test.

Under these conditions the Allis-Chalmers engines have averaged over 5,000 hours of operation before their first overhaul. Many of them have given more than 20,000 hours of service since 1949, and are still "going strong."

Other Allis-Chalmers engines also take a hand in production even before the hauling stage. A large shovel powered by a Model 6DCS-1879 engine has loaded out more than seven million tons of ore since June, 1949. There are Allis-Chalmers engines on the drills, compressors and dozers.

Altogether, the performance of these big, tough engines has helped hold the over-all cost of moving ore and overburden to less than ten cents a ton. It will pay you to put productive performance like this under the hood of your trucks and other units. Write for complete details and the name of your nearest Buda Division dealer.

ALLIS-CHALMERS, BUDA DIVISION, MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS

BC-1

Trucks at the Bagdad Copper Corp. mine, Bagdad, Arizona, haul overburden and ore up grades as steep as 18 percent and around five torturous switchbacks — a real test for any hauling unit and its engine.

No time lost

Hartford moved fast to replace our wrecked dragline

(Based on Company File #HS44129)

The driver hauling our dragline didn't have much choice when the air brakes on his tractor-trailer failed on a steep downgrade.

Should he go off the road—and risk plunging over the embankment? Or jack-knife truck and trailer and take his chances?

He decided to jack-knife. The chains holding the dragline to the lowboy snapped. Off went the rig, crashing heavily on its side. Fortunately, our man came through okay.

And, I might add, so did our Hartford Fire Insurance Company Agent. But in another way, of course. *He didn't let any grass grow under his feet in arranging for settlement of our claim.* With his help, the actual amount of damage was quickly agreed on—and a check promptly given us for $5,450!

On the job . . . off the job . . . in transit . . .

You never know where an unforeseen accident may overtake your equipment.

But you *can* know where prompt help is coming from! Hartford is set up to save you costly time losses. You know how they can mount up!

So play safe. See your Hartford Fire Insurance Company Agent or your insurance broker now. And have prompt, satisfying *Hartford* help on tap when you need it!

Year in and year out you'll do well with the

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Northwestern Fire & Marine Insurance Company
Twin City Fire Insurance Company . . . *Minneapolis 2, Minnesota*

free from defects. See Annotation 88 A.L.R. 797; Havard v. Board of Supervisors, Miss., 70 So. 2d 875."

The court further stated: "If any dangerous condition existed in connection with the vents installed by the appellee (contractor), it resulted from plans and specifications prepared by appellant's architect, and which appellee was required to follow by the terms of the contract. Some of the cases ground the rule on assumption of risk by the owner, or contractee. The majority of the cases based it on an implied warranty by the owner that the plans or specifications are suitable for the particular purpose coupled with an absence of an express warranty by the contractor in regard to the sufficiency of the specifications.

"In MacKnight Flintic Stone Co. v. City of New York, 160 N. Y. 72, 54 N. E. 661,664, it was said: 'If there was an implied warranty of sufficiency, it was made by the party who prepared the plan and specifications, because they were his work; and, in calling for proposals to produce a specific result by following them, it may fairly be said to have warranted them adequate to produce that result. If I agree to produce a certain result according to my own plan, I impliedly warrant its sufficiency; but, if I agree to produce that result by strictly following the plan prepared by another party, he impliedly warrants its sufficiency. The responsibility rests upon the party who fathers the plan, and presents it to the other with the implied representation that it is adequate for the purpose to be accomplished.' "

The court found as a fact that there was no negligence upon the part of the contractor in the performance of the work and that the explosion resulted from faculty plans and specifications.

(1) Trustees of the First Baptist Church v. McElroy, 78 So. 2d 128, Supreme Court of Miss., Feb. 28, 1955.

Written Contract Required Where That Was Intention

A verbal agreement to enter into a contract is not in itself a binding contract if the parties look forward to making a written agreement. Under some circumstances, the requirement of reducing the contract to writing is waived.

Such a question arose in Texas, where a contractor thought he had a subcontract for electrical work from a prime contractor. The prime contractor backed out and the electrical contractor sued for breach of contract.

The prime contractor contended

that there was an understanding between the parties that there was to be no binding contract until the same had been reduced to writing and signed by both parties.

The court found that the evidence sustained the prime contractor's contention and dismissed the action.[1]

In commenting on the law, the court said: "When a contract containing mutual obligations has been reduced to writing in the form of a complete contract and signed by one of the parties, it is strong proof, in the absence of any evidence to the contrary, that the other party was also to sign the contract before it was to become binding. Chavez v. Goodman, Tex. Civ. App., 152 S.W. 2d 826; Magnolia Petroleum Co. v. McMillan, Tex. Civ. App., 168 S.W. 2d 881; 10 Tex. Jur. 65, Notes, Section 152; Houston Oil Co. v. Singleton, Tex. Civ. App., 44 S.W. 2d 479; Parmer County v. Smith, Tex. Civ. App., 47 S.W. 2d 883; Vol. 1, Williston on Contracts, p. 59, Sections, 28, 28a.

"The only exception to this rule is where the party which has not signed, has otherwise assented to the contract, or has accepted benefits under the contract. Martin v. Roberts, 57 Tex. 564; Campbell v. McFadin, 71 Tex. 28, 9 S.W. 138; 10 Tex. Jur., p. 264, Section 152."

Where the party for whom the work is to be done directs the contractor to proceed with the work before the parties have signed the contract, such conduct will be deemed a waiver of the requirement of a written contract, and a valid contract exists even though it has not been signed by both parties.

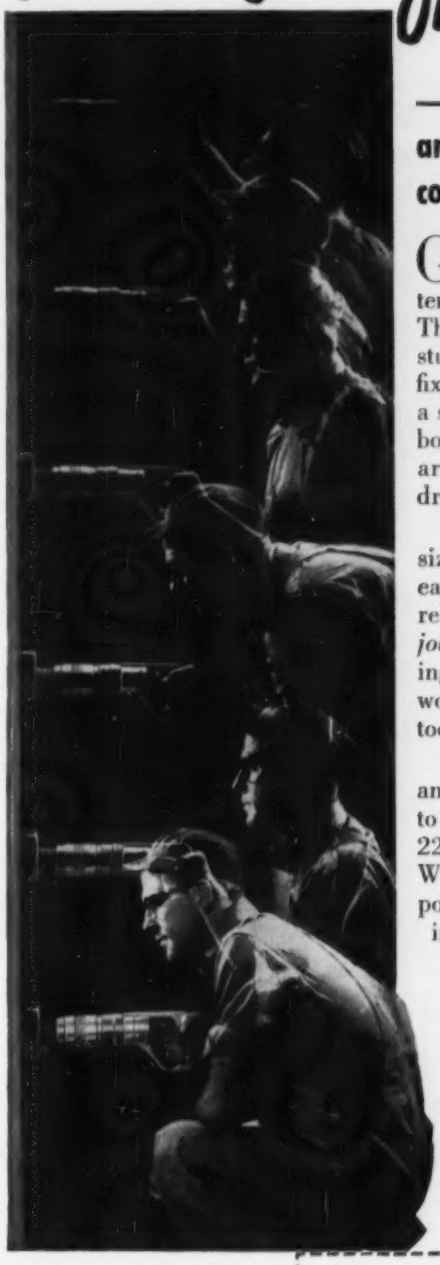
(1) Rea v. Simmons & Simmons Const. Co., 275 S.W. 2d 747, Court of Civil Appeals of Texas, Feb. 2, 1955.

Terms of Contract Control Recovery for Extra Work

The general contract for a job provided that all claims for extra work should be made in writing within a reasonable time after receipt of instructions to do such work, and in any event, before the contractor proceeds to perform the work in question. The contract also provided that no claim for extra work would be valid unless made and authorized by the owner in writing.

The general contractor sublet part of the work. The subcontract contained a provision to the effect that all claims for extra work against the general contractor would be made and governed by the terms of general contract in reference to the payment for

ONE MAN- ONE TOOL- ONE MINUTE-

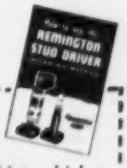


—and 6 fastening studs are securely set in concrete or steel!

GIVE A MAN the Remington Stud Driver and that fastening job's practically done! This compact tool sets up to 6 studs per minute . . . anchors fixtures to concrete or steel with a squeeze of the trigger. It sets both ¼" and ⅜" diameter studs arrow-straight — with no predrilling required.

Change-over from one stud size to the other is quick and easy. Operator can change barrels in 90 seconds, *right on the job.* There's no time lost in going from medium- to heavy-duty work — no need for a second tool.

There are 40 different styles and sizes of Remington Studs to choose from and a variety of 22 and 32 caliber power loads. With studs and cartridges in pocket, Remington Stud Driver in hand — you're ready for *every* stud-fastening job. Find out how the tool saves time and money in fastening wood sleepers, furring strips, metal window frames and other fixtures by mailing coupon below.



Remington

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Please send me your free booklet which shows how I can speed the job and save with the Remington Stud Driver.

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2. TEMPORARY UNDERPINNING SUPPORTS BUILDING LATER TO BE DEMOLISHED.
3. FOUNDATION WILL BE BEARING PILES AND CAISSONS TO ROCK.

Project: New Home Office building of Mutual Benefit Life Insurance Co., Newark, N. J.
Architects: Eggers & Higgins, New York City.
Engineers: Weiskopf & Pickworth, New York City.

Though superstructure plans were in the design stage, foundation work was under way for this largest Newark office building in 20 years. Photo shows a few highlights. In the structure at left, wall chases are planned for the erection of permanent steel before demolition takes place.

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extra work, except that the time for making claims for extra work was limited to one week from the time when the doing of such work was ordered.

The subcontractor brought action against the general contractor to recover for extra work he had performed. The action was dismissed on the ground that the subcontractor had not complied with the contract in reference to the payment for extra work.

(1) State v. Koch, 272 S.W. 2d 22, Kansas City Court of Appeals, October 4, 1954.

Contractor's Remedies For Breach of Contract

If an owner breaches a contract by preventing the contractor from performing the work or by failing to make the installment payments required by the contract, the contractor can abandon the job.

He then has two elections:

- He can sue under the contract to recover an amount equal to that proportion of the contract which the work he has done represents, plus the profits lost, or
- He can sue to recover the fair and reasonable value of the work performed.

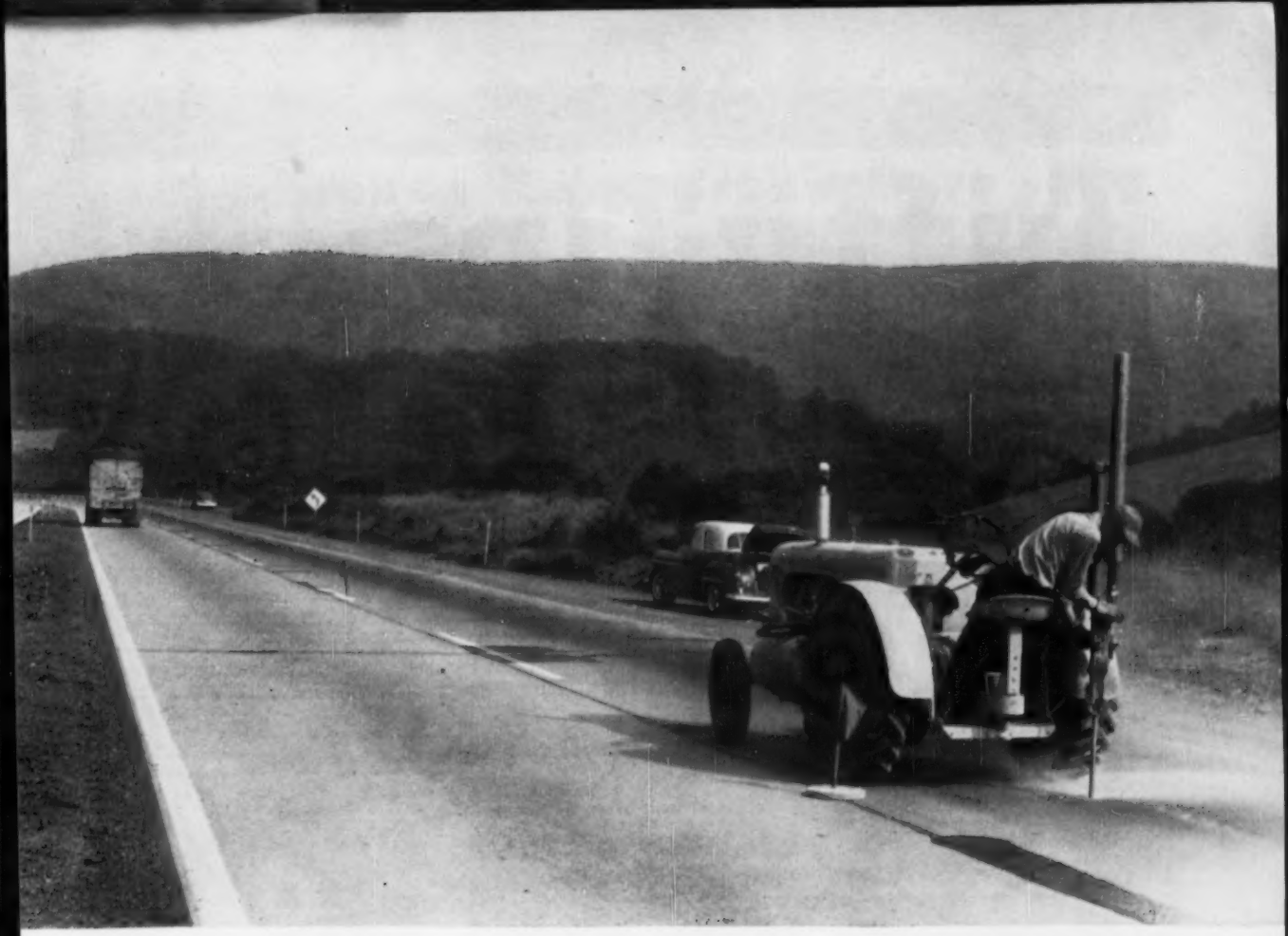
In either case, a deduction will be made for the amount paid to the contractor up to the time the work was abandoned.

Obituaries

Raymond L. Walsh, 65, who retired three months ago as assistant vice president and chief engineer of Universal Atlas Cement Company, New York, died Feb. 22. He had been with the cement company since 1925 and on retirement was retained in a consulting capacity. An electrical engineering graduate of Illinois Institute of Technology in 1913, he joined Universal Atlas in Chicago.

John H. Cahill, 85, retired Louisville, Ky., contractor, died Feb. 20. He had been president of the J. H. Cahill Contracting Co. and Cahill Braeshaer Building Co., upon his retirement in 1923.

Edward E. Hudson, 69, former engineer for the Oklahoma Corporation Commission, died Feb. 22 at Norman, Okla. A graduate of the University of Kansas, Hudson served with the commission from 1934 to 1942 and later became a general contractor operating in Oklahoma, Missouri and Illinois. He retired five years ago.



Underseal Work on Penn Turnpike Done 45% Faster with One Tractor-Compressor and Drilling Attachment

. . . not only is pavement drilling faster, but costs are lowered through savings in equipment and manpower

One self-propelled Le Roi Tractair has replaced a parade of drill runners and hose-drag helpers struggling along behind truck-towed compressors on the busy Penn Turnpike. This tractor-compressor increases the speed of pavement drilling by 45% on asphalt underseal work. At the same time, it provides a tremendous reduction in equipment and labor costs.

The old method of pavement drilling required a large crew with hand-held pneumatic drills, another crew to drag hose, and two or more truck-towed compressors. Work was slow and expensive. Often underseal crews had to stand around waiting for the drilling operation. And heavy Turnpike traffic was tied up behind the project.

A money- and time-saving solution was found in the Le Roi Tractair, operated by one man. It's a combination 42-hp wheel tractor and a 125-cfm air compressor that can be equipped with a wide variety of mounted attachments and air tools. In this instance, the Le Roi-Cleveland Trac-Jac is the attachment used on the Tractair. The Trac-Jac is set vertically at right angles to the pavement where it swings easily so that the drill point can be centered over location marks made by surveyors. Bits bite into concrete rapidly because the Trac-Jac has a quick-acting air feed.

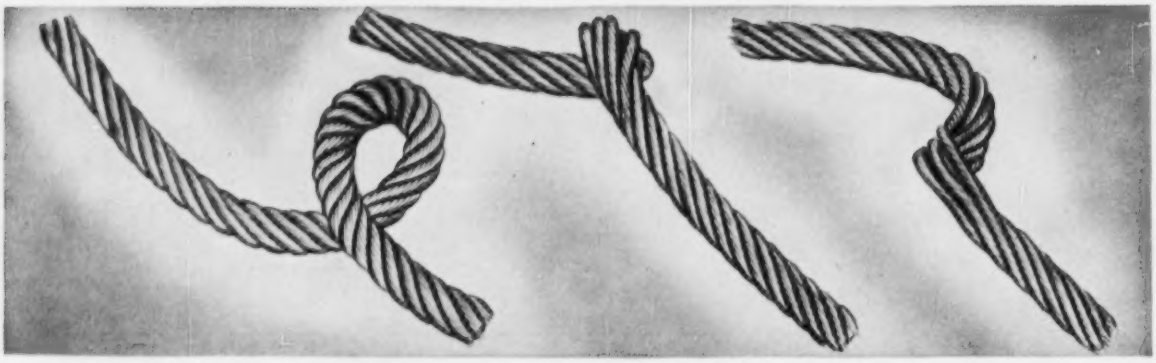
On this job, the Le Roi Tractair with Trac-Jac attachment drills 100 holes per hour, 12 inches deep through concrete with an average hole spacing of six feet. This "self-contained" unit is all that is needed to drill pavement faster at much lower cost. It also permits traffic to proceed during work without serious interference.

There are many ways that the self-propelled Le Roi Tractair can increase production and cut costs. It can do other highway jobs, and countless tasks in light and heavy building. Many efficient attachments are available, plus dozens of Le Roi-Cleveland Air Tools. See your Le Roi distributor.

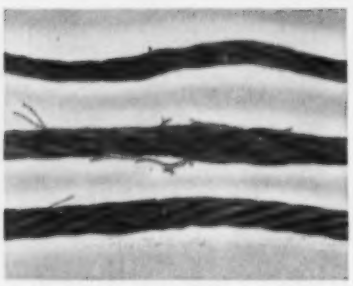
Le Roi Division of Westinghouse Air Brake Co., Milwaukee 1, Wis. also manufactures portable and stationary air compressors, air tools, and heavy-duty engines. Write today for information about any of these products.

7-42

Tuffy® Tips

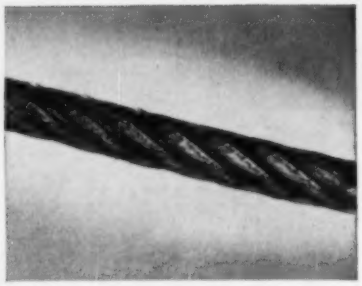


This Is Often Where The Trouble Starts...

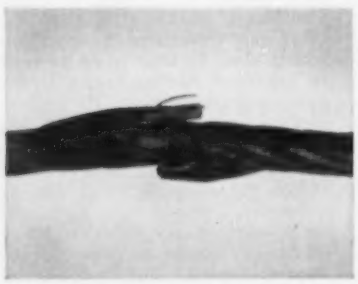


Here are three types of open kinks, all resulting from mishandling of wire rope. Guard against kinks by winding rope properly on the drum, and *never* pull a loop smaller, always enlarge it then straighten out the rope.

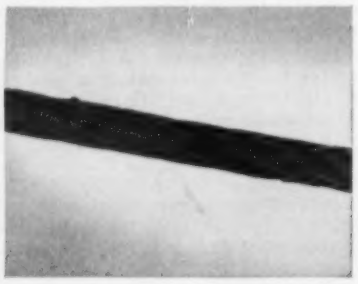
The start and finish of doglegs; the end being the point when all the wires on one side of the rope were worn through. Anything, such as a pulled loop, that causes a permanent bend or "set" will result in a dogleg.



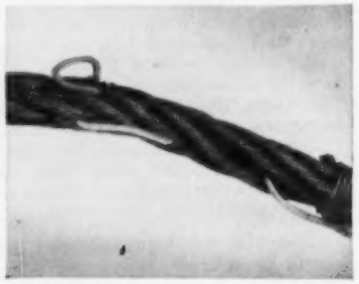
While different wire rope is constructed to resist abrasion to different degrees, improper use leads to injury. Watch for abrasion and when it begins to show locate the point where it is occurring and correct the cause.



Severe corrosive water conditions caused rust and corrosion to produce a one-strand break in this rope. Lubrication during the time the rope was in service would have retarded the damage . . . added greatly to the rope's life.

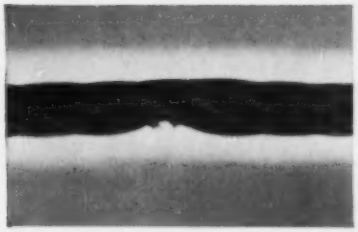


If broken in improperly, high strands like these may result. When installing, make sure that the fabricated relation between *strand with strand* and *strands with core* are not changed.



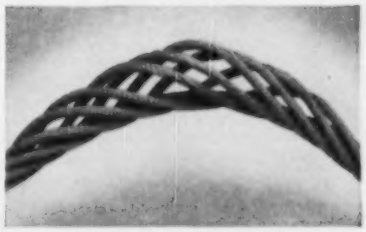
Nailing a wire rope through the core often causes many undesirable results. The wires and the core are badly damaged. A high strand may develop near the end or many feet away.

Broken Rules Break More WIRE ROPE Than Capacity Loads

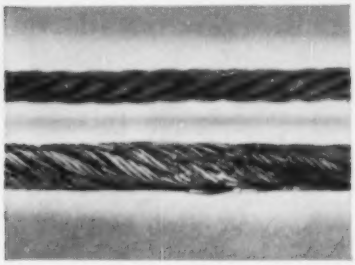


The photo at the left shows what happens when rope is run over or struck by a hard object and crushed. The damage to the strands greatly reduces the service life so carefully built into the rope.

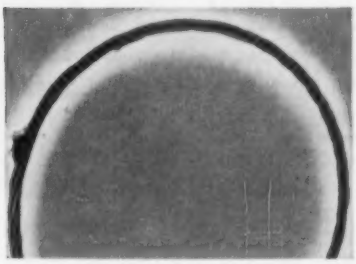
Photo at the right shows how sudden release and rebound from an over-stressed condition may often cause birdcaging. Throwing a loop into the rope is also a major cause of birdcaging. Lang Lay ropes in particular are vulnerable to this abuse.



Here is an example of excessive pinching in the sheave grooves. This rope lasted through only 1-½ hours of service. To prevent pinching, make sure grooves are not worn deep and that the bearing surface is sufficiently large.



Excessive drum crushing like this occurs at points of cross-over or when rope is wound unevenly. Check for even winding of each layer on the drum to prevent crushing of this type.



When a popped core occurs, continued use causes the rope lay to lengthen out considerably. This displacement of the core is usually caused by load tension being suddenly removed from the rope.

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Tuffy Scraper Rope

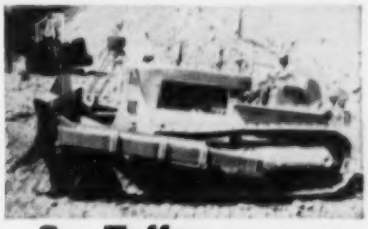
Mount a reel on your scraper and get full service out of every foot. Specially constructed for scraper service where complex destructive forces overwhelm ordinary rope.

Tuffy Slings & Hoist Line

Slings of the famous Tuffy machine braided, kink-resisting, 9-part construction, cut replacement costs. For balanced performance, team them up with Tuffy Hoist Line.

Tuffy Dragline

Flexible enough for easy casting, tough enough to give you maximum abrasive resistance and service life in handling wet or dry, hard or soft materials.



Tuffy Dozer Rope

Has the stamina needed to stay on the job after ordinary ropes are thrown away. In 1/2" or 9/16" size on 150" reels for easy mounting to facilitate cut-off without waste.

Your Tuffy Distributor: Dependable Source of Information.

His job is more than just supplying the wire rope you want—when you want it. Your Tuffy distributor is always on the alert to help make your equipment do the best possible job, at the lowest possible cost. When you have a problem that calls for special knowledge concerning your equipment that uses wire rope, give your Tuffy distributor a call. He'll be glad to furnish the help you need including factory engineers.

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J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BUILDINGS—BA

Mass., Tewksbury—SCHOOL—BA 3/23—Town, School Dpt., construct elementary school, $600,000. Plans deposit $100, refundable $60. Donald Ray McMullin, 216 Conant Rd., Weston, archt. Stewart Assoc., Inc., 698 Mass Ave., Cambridge, struct. and mech. engr. CD 1/10.

HEAVY CONSTRUCTION—LB & CA

† **Vera Constr., Inc.**, 718 Huntington Ave., Boston, Mass. LB $355,659, est. $325,166. Lot A; $437,496, est. $395,616, Lot D, Special AAA Facilities Rehoboth, Swansea and Dighton, Mass., and Foster, R. I., ENG-19-016-56-97, MASSACHUSETTS and RHODE ISLAND. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids Feb. 21. Spector & Montgomery, Falls Church, Va., archts. CD 2/9.

▲ **CONNECTICUT**—State Hy. Dpt., State Office Bldg., Hartford.

William M. Moore Bldg. Corp., 75 W. 190 St., New York, N. Y., and **Lopier Constr. Co.**, 210 E. 40 St., New York, N. Y., CA, $2,562,703. Proj. 317-20, substructure main portion Quinnipiac River Bridge, New Haven. Bids Jan. 30, awarded Feb. 20. CD 2/1, under LB.

BUILDINGS—LB & CA

▲ **John Bowen Co., Inc.**, 173 Boston St., Dorchester, Mass. LB $1,123,360. OFFICE, BOSTON, MASS. George Robert White Fund, City Hall, Boston, Mass. Bids Feb. 16. CD 2/3.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

† **N. Y., West Point**—SWITCHGEAR—BA On Or About 6/12—U. S. Eng., 111 E. 16 St., New York, Zone 3, replacement of switchgear at U. S. Military Academy, $100,000-$500,000. Zimmerman Eng. Co., 500 Fifth Ave., New York, Zone 36, engrs. CD 7/19/55, under Public Buildings.

BUILDINGS—BA

N. Y., Flushing—SCHOOL—BA 3/22—Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City, Zone 1, new third story addn. to new P. S. 165, Queens, 70 Rd. and 150 St., Proj. E-410, $423,900. Plans deposit $8 for general constr., $4 each for plumbing and drainage, heating and ventilating, electrical work and lighting fixtures. CD 2/24.

▲† **N. Y., Brookhaven**—MEDICAL RESEARCH CENTER—BA On Or About 4/9—Atomic Energy Comn., 1901 Constitution Ave. N.W., Wash., D.C., Medical Research Center at Brookhaven National Laboratory, incl. 1 story, 58,000 sq. ft. research laboratory, 1 story, 45,000 sq. ft. research hospital, 7,000 sq. ft. industrial medicine and X-ray, 1 story, 8,000 sq. ft. central facilities, reactor bldg., exten. of distr. sys. for power, water, heat, sewerage, necessary site work, etc. Plans deposit $50. Eggers & Higgins, 100 E. 42 St., New York, archts. Weiskopf & Pickworth, 2 W. 45 St., New York, struct. engrs. Syska & Hennessy, Inc., 144 E. 39 St., New York, mech. engr. CD 12/14.

▲ **Pa., Allentown**—MANUFACTURING, etc.—Bids Asked—Western Electric Co., Inc., 550 Union Blvd., mfg. bldg. addn., service bldg., boiler house, parking lot, $3,500,000.

BUILDINGS—SLC

D. C., Wash.—OFFICE—Pereira & Luckman, archts., 9220 Sunset Blvd., Los Angeles, Calif., soon lets contract office, 22 and "C" Sts. N. W., for National Assoc. of Life Underwriters, 11 W. 42 St., New York, N. Y. $500,000. George W. Ewing Co., 1107 19 St. N. W., engr. CD 4/4.

HEAVY CONSTRUCTION—LB & CA

M. L. Bayard & Co., Inc., 20 and Indiana Ave., Phila., Pa. LB $760,524. (10 bidders) manufacture and furnishing of 48 intake gate hoists for Barnhart Island Power Plant in St. Lawrence River Power Proj., near Massena, Contr. No. P-34, NEW YORK. Power Authority of the State of New York, 270 Broadway, New York 7, N. Y. Bids Feb. 23. CD 1/13.

▲ **NEW JERSEY**—State Hy. Dpt., 1035 Parkway Ave., Trenton.

F. A. Canuso & Sons, Inc., 173 W. Roosevelt Blvd., Phila., Pa., LB, $1,389,717 (7 bidders) 2.07 mi. Federal St. from Cooper River to 41 St., F.A.S.P. S-80 (3) Camden Co. Bids Feb. 21. CD 1/27.

Milano Constr. Co., 1958 W. 26 St., Erie, Pa. LB $97,190. Contr. No. 1, intercepting sewers, TITUSVILLE, PA. Auth. Bd. of Titusville, Municipal Auth., Crawford Co., Titusville, Pa. Bids Feb. 17. CD 1/13; **H. Platt & Co.**, 1104 Sellinger Ave., Erie, Pa. LB $394,000. Contr. No. 2, primary sewage treatment plant, general constr.; LB $471,380, Contr. No. 2-A intermediate sewage treatment plant, general constr. (Titusville, Pa.).

BUILDINGS—LB & CA

Mount Vernon Co., c/o Leo Stillman, archt., 332 E. 149 St., New York 51, N. Y. Separate Contracts. $700,000. OFFICE, South Fifth Ave. near First St., to be occupied by New York Telephone Co., MOUNT VERNON, N. Y.

▲ **Mar-Dale Manor Development, Inc.**, 712 Market St., Camden, N. J. Separate Contracts. $1,500,000. RESIDENTIAL DEVELOPMENT, Somerdale Rd., etc., BLACKWOOD, N. J.

Bordentown Gardens, Inc., Att. George L. Mittelman, R.D. 1, Georgetown Rd., Bordentown, N. J. Separate Contracts. $400,000, 40-unit RESIDENTIAL DEVELOPMENT, Yorktown Rd., BORDENTOWN, N. J.

Halter Building Service, R. D. No. 3, Bridgeton, N. J. Separate Contracts. $480,000. 40-unit RESIDENTIAL DEVELOPMENT, BRIDGETON, N. J.

Morris Manor, Att. David Montgomery, Clementon, N. J. Separate Contracts. $600,000. RESIDENTIAL DEVELOPMENT, Blackwood RD., CLEMENTON, N. J.

Doernbach Homes, 128 S. Cincinnatti Ave., Egg Harbor, N. J., Separate Contracts. $990,000. 90-unit RESIDENTIAL DEVELOPMENT, Galloway Twp., EGG HARBOR, N. J.

Knoll Twp. Acres, Inc., 421 Kingston Ave., Barrington, N. J. Separate Contracts. $420,000. RESIDENTIAL DEVELOPMENT, Gloucester and Lindenwold Twps., LINDENWOLD, N. J.

▲ **Kaymar Constr. Co. Inc.**, Lancaster Ave., Devon, Pa. Separate Contracts, $12,000,000, RESIDENTIAL DEVELOPMENT, Route 38 area, MOORESTOWN, N. J. Carroll & Stephenson, 262 S. 15 St., Phila., Pa., archts.

Mahoney Constr. Co., 7714 Ventnor Ave., Margate, N. J., Separate Contracts, $410,000. RESIDENTIAL DEVELOPMENT, E. Ridgewood Ave., PLEASANTVILLE, N. J.

Harold A. Pearson, State Rd. 206, Princeton, N. J., Separate Contracts, $525,000. RESIDENTIAL DEVELOPMENT, Hillcrest Estates, PRINCETON, N. J. CD 4/26/54.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England	**Middle West**
Middle Atlantic	**West of Mississippi**
South	**Far West**

PROPOSED WORK

Water Supply	**Public Buildings**
Sewers, Waste Disposal	**Mass Housing**
Bridges	**Commercial Buildings**
Streets & Roads	**Industrial Buildings**
Earthwork, Waterways	**Unclassified**

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
SOON LETS CONTRACT: SLC
LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	**Federal Government**
▲	**Project of $1,000,000 or over.**
ENR	**Engineering News-Record**
CD	**Construction Daily**

For additional reports see Construction Daily.

▲ **Raymond L. Corper**, 1401 Bethlehem Pike, Flourtown, Pa. Separate Contracts. $1,394,000. RESIDENTIAL DEVELOPMENT, Welsh Rd. and Tennis Ave., AMBLER, PA.

▲ **Hughes-Foulkrod Co.**, 1505 Race St., Phila., Pa. CA $3,000,000. OFFICE, BALA CYNWYD, PA. Bocon Corp., 1515 Locust St., Phila., Pa. CD 12/12.

Leopard Lakes Estates, Inc., Att Matt Cambridge, Newtown Rd., Berwyn, Pa. Separate Contracts. $480,000. RESIDENTIAL DEVELOPMENT, 12 units, BERWYN, PA.

Helwig Bros., Inc., 70 Limekiln Pike, Glenside, Pa. Separate Contracts. $920,000. RESIDENTIAL DEVELOPMENT, 40 units, Fenton Rd., CHELTENHAM, PA.

Michael Stephe, Inc., 1416 Academy Lane, Cheltenham, Pa. Separate Contracts. $650,000. RESIDENTIAL DEVELOPMENT, Harrison Ave., CHELTENHAM, PA. Theodore Brandow, Erdenheim, Pa., archt.

McHenry Builders, Inc., 6501 Ditman St., Phila., Pa. Separate Contracts. $468,000. RESIDENTIAL DEVELOPMENT, 36 units, CHURCHVILLE, PA.

Colmar Constr. Co., Inc., Colmar, Pa. Separate Contracts. $605,000. RESIDENTIAL DEVELOPMENT, COLMAR, PA.

A. C. Shand, Devon, Pa. Separate Contracts. $500,000. RESIDENTIAL DEVELOPMENT, DEVON, PA.

Rendel Village Homes, Inc., c/o Sidney Feinstein, Longshore Ave. and Oakland St., Phila., Pa. Separate Contracts. $550,000. RESIDENTIAL DEVELOPMENT, Crescent St., FLOURTOWN, PA.

▲ **Eastern Mortgage Co.**, 1528 Walnut St., Phila., Pa. Separate Contracts. $7,000,000. RESIDENTIAL DEVELOPMENT, 468 units, Upper Merion Twp., Valley Forge Rd., GULPH MILLS, PA.

A. Moore Lifter, 808 West Ave., Jenkintown, Pa. Separate Contracts. $950,000. RESIDENTIAL DEVELOPMENT, 80 units, Moreland Ave., HATBORO, PA.

Barclay White & Co., 22 N. 36 St., Phila., Pa. CA $850,000. WAREHOUSE and OFFICE, KING OF PRUSSIA, PA. William Montgomery Co., 999 N. Second St., Phila., Pa. CD 7/6.

▲ **Walter Eltz**, Bethlehem Pike, Whitemarsh, Pa. Separate Contracts. $1,500,000. RESIDENTIAL DEVELOPMENT, North Wales Rd., LANSDALE, PA.

▲ **Wark & Co.**, 1920 Sansom St., Phila., Pa. LB $1,569,400. general constr., Marple Newtown Joint SENIOR HIGH SCHOOL, NEWTOWN SQUARE, PA. Marple Newtown Joint School Bd., Newtown Square, Pa. Bids Feb. 9. CD 1/18.

Frost Constr. Co., Att. R. Irwin, Jeffersonville, Pa. Separate Contracts. $800,000. RESIDENTIAL DEVELOPMENT, West Norriton Twp., Halgord Hills, NORRISTOWN, PA.

Facciolio & Barrett, 779 Lancaster Ave., Villanova, Pa. Separate Contracts. $500,000. RESIDENTIAL DEVELOPMENT, Sugartown Rd., PAOLI, PA.

Joseph R. Farrell Constr. Co., 4424 Market St., Phila., Pa. CA $590,293. SCHOOL, CONVENT, RECTORY, PHILA., PA. Holy Innocents R. C. Church, L St. and Hunting Park Ave., Phila., Pa. Bids Jan. 31. CD 1/13.

Benjamin Glazer, 1708 Race St., Phila., Pa. Separate Contracts. $750,000. RESIDENTIAL DEVELOPMENT, PHILA., PA.

Montague Homes, Inc., 7037 Castor Ave., Phila., Pa. Separate Contracts. $600,000. RESIDENTIAL REDEVELOPMENT, Talbot St., PHILA., PA.

▲ **Patrician Homes, Inc.**, 615 E. Upsal St., Phila., Pa. Separate Contracts. $3,000,000. RESIDENTIAL DEVELOPMENT, Knight Rd., etc., PHILA., PA.

Frank B. Radomski & Sons, 224 W. Queen Lane, Phila., Pa. CA $550,000. CHURCH and SOCIAL HALL, PHILA, PA. St. Josaphat R. C. Church, 124 Cotton St., Phila., Pa. G. C. Freeman, 419 Carsonia Ave., Pennside, Reading, Pa., archt.

Tustin Park Homes, 4719 Oxford Ave., Phila., Pa. Separate Contracts. $880,000. RESIDENTIAL DEVELOPMENT, 80 units, Megargee St., etc., PHILA., PA.

Ridley Parkview Homes, 509 Lindsay St., Ridley Park, Pa. Separate Contracts. $960,000. RESIDENTIAL DEVELOPMENT, 80 units, Lakeview Dr., RIDLEY PARK, PA.

Lam & Buchsbaum, 8019 York Rd., Elkins Park, Pa. Separate Contracts. $527,000. RESIDENTIAL DEVELOPMENT, Cox and Gunpondol Rds., RYDAL, PA.

Emil Stahl & Son, Southampton, Pa. Separate Contracts. $750,000. RESIDENTIAL DEVELOPMENT, Maplecrest Section, SOUTHAMPTON, PA.

John P. Hallahan Co., 10 S. 18 St., Phila., Pa. CA $640,000. RESIDENTIAL DEVELOPMENT, Rte. 322, WEST CHESTER, PA. Harmony Hills, Inc., Att. Warren Walls, 20 S. 18 St., Phila., Pa.

Radnor, Inc., 6784 Market St., Upper Darby, Pa. Separate Contracts. $510,000. RESIDENTIAL DEVELOPMENT, West Chester-Paoli Pike, WEST CHESTER, PA.

Town & Country Real Estate, 20 E. Market St., West Chester, Pa. Separate Contracts. $780,000. RESIDENTIAL DEVELOPMENT, Westtown Park, WESTTOWN, PA.

(Continued on page 112)

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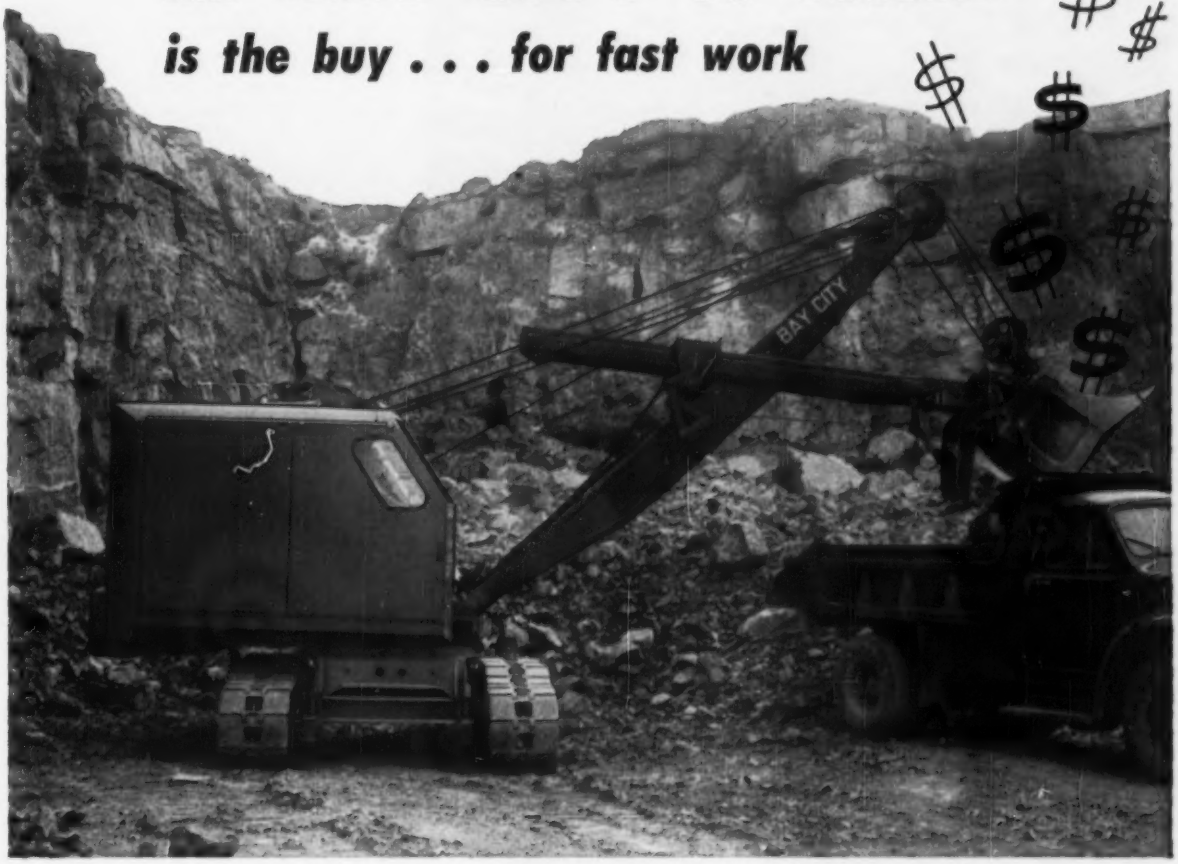

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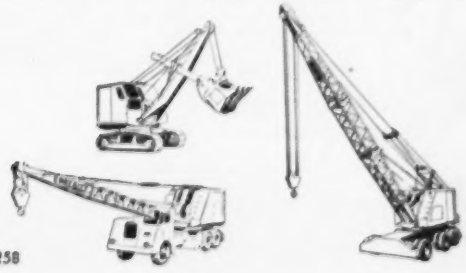

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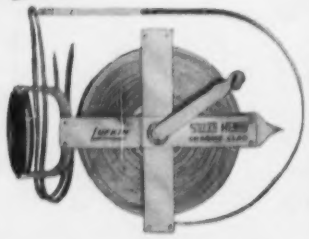

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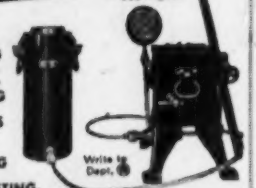

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(Continued from page 110)

Myron B. Sloane, 311 S. Sterling Rd., Elkins Park, Phila., Pa. Separate Contracts. $700,000. RESIDENTIAL DEVELOPMENT, Moreland Hills, WILLOW GROVE, PA.

▲ **Holland Development Co.**, Feasterville, Pa. Separate Contracts. $1,900,000. RESIDENTIAL DEVELOPMENT, Holland Farms, YARDLEY, PA.

▲ **John McShain, Inc.**, 3501 Sinclair Lane, Baltimore, Md. LB $17,100,000. JEWISH MEDICAL CENTER and THE SINAI GENERAL HOSPITAL OBSTETRICAL and GYNECOLOGY BLDG., NURSES HOME, SCHOOL, SERVICE BLDG., RESEARCH BLDG., Mt. Pleasant Tuberculosis Sanatorium, BALTIMORE, MD. Associated Jewish Charities and Sinai Hospital, 319 W. Monument St., Baltimore, Md. Bids Feb. 14. CD 2/1.

Merando, Inc., 4098 Minnesota Ave. N.E., Wash., D. C., LB, $539,949 (12 bidders) WOMENS BUREAU BLDG., Metropolitan Police, N. Capitol St. between "K" and "L" Sts. N. W., WASH., D. C. D. C. Govt., Dir. Bldgs. & Grounds, 499 Pa. Ave. N.W., Wash., D. C. Bids Feb. 17. CD 2/6.

McCallister Brothers, Hayden Park, Del., Separate Contracts, $720,000. RESIDENTIAL DEVELOPMENT, HAYDEN PARK, DEL.

▲ **Franklin Builders, Inc.**, 1400 Silverside Rd., Wilmington, Del., Separate Contracts, $2,000,000. 300-unit RESIDENTIAL DEVELOPMENT, WILMINGTON, DEL.

Aldo Gibellino & Son, 513 Lennox Rd., Wilmington, Del., Separate Contracts, $900,000. RESIDENTIAL DEVELOPMENT, Penn Acres, WILMINGTON, DEL.

▲ **Capaldi-Capano, Inc.**, 1035 Phila. Pike, Wilmington, Del., Separate Contracts. $1,600,000. RESIDENTIAL DEVELOPMENT, Canterbury Hills, etc., WILMINGTON, DEL.

SOUTH

HEAVY CONSTRUCTION—BA

† **La., Shreveport**—AIRCRAFT REFUELING SYSTEM—BA 3/28—U. S. Eng., P.O. Box 867, Little Rock, Ark., hydrant type aircraft refueling system, Barksdale Air Force Base, ENG-03-050-56-48. $500,000-$1,000,000. CD 2/21.

BUILDINGS—BA

La., Port Allen—COURT HOUSE—BA 3/15—West Baton Rouge Parish Police Jury, Port Allen, 2 story, brick courthouse with jail covering part of third floor, $600,000. Plans deposit $40, Goodman & Miller, 125 North Blvd., Baton Rouge, engrs. CD 12/28, under LB.

▲ **La., New Orleans**—SCHOOL—BA 3/21—Orleans Parish School Bd., 703 Carondelet St., George Washington Carver Junior-Senior High School, bounded by Louisa and St. Ferdinand Sts., Paderas & L. & N. R.R., $3,814,473. Plans deposit $200. Curtis & Davis, 338 Baronne St., engrs. CD 7/1/53.

HEAVY CONSTRUCTION—LB & CA

† **FLORIDA**—Bureau P. Rds., Dpt. Commerce, 1440 Columbia Pike Arlington, Va.

Central Florida Constr. Co., Riviera Beach, Fla., LB $406,650. roadwork, excavation, bit. prime, surf. tr., Proj. 1A6, Everglades National Park from concrete bridge to Nine Mile Bend 5.701 mi., Dade Co. Bids Feb. 10. CD 1/19.

▲ **FLORIDA**—Florida State Turnpike Auth., Communication Bldg., Fort Lauderdale,

Brinson Allen Constr. Co., 51 St. and E. Broadway Ave., Tampa, Fla., CA, $612,516, roadbed and base 14.4 mi. Broward and Palm Beach Counties. Bids Jan. 19. CD 1/25, under LB.

† **Edward M. Fleming Constr. Co.**, 4121 N. W. 25 St., Miami, Fla., LB, $447,831, Guided Missile Control Facility No. 1. (WS 107) Phase 2, Air Missile Test Center, Cape Canaveral A.A.F.B. for Air Force, CAP CANAVERAL, FLA. General Electric Co., River Rd., Schenectady, N. Y.

BUILDINGS—LB & CA

A & P Constr. Co., 419 W. 22 St., Norfolk, Va., CA, $500,000, 5 story OFFICE, NORFOLK, VA. Owner, c/o contractor. Lublin, McGaughy & Assocs., 220 W. Freemason St., Norfolk, Va., archts.-engrs.

H. L. Eargle Constr. Co., 1606 Sunset Dr., Columbia, S. C. LB $489,700. White NURSES HOME, COLUMBIA, S. C. Bd. Trustees Columbia Hospital of Richmond Co., 2020 Hampton St., Columbia, S. C. Lafaye, Fair, Lafaye & Assocs., 1226 Sumter St., Columbia, S. C., archts. Bids Feb. 21. CD 6/15/53.

State Bldg. Auth., State Capitol, Baton Rouge, La. rejected bids Feb. 7, brick, steel 50,000 sq. ft. Negro trade school, Piety and Benefit St., NEW ORLEANS, LA. LB $775,000. CD 2/15, under LB.

W. D. Rommel Co., 1449 Hugh St., Louisville, Ky. LB $450,000. freight WAREHOUSES and OFFICE, 15 and Magnolia Sts., LOUISVILLE, KY. Southern Railway Co., G. H. Echols, ch. engr., P. O. Box 1808, Wash., D. C. Bids Feb. 16. CD 2/6

MIDDLE WEST

BUILDINGS—BA

Ill., Chicago—APARTMENT—Bids Asked—Owner, c/o Joseph W. Bagnuolo, archt., 6968 North Ave., 54 unit apartment, Catalpa nd Mango Sts. $500,000.

HEAVY CONSTRUCTION—LB & CA

▲† **Mayfair Constr. Co.**, 5660 N. Kedzie Ave., Chicago 45, Ill., CA, $1,103,591, Special AAA and related work, Site C-47, Porter Co., ENG-11-032-56-22, IN-

DIANA. U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill. Bids Feb. 9. CD 1/20.

† **Pathman Constr. Co.**, 100 N. La Salle St., Chicago, Ill., LB **$621,793**, interconnecting corridors and engine-generator bldgs., Special AAA Sites, ENG-11-032-56-35, INDIANA and ILLINOIS. U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill. Bids Feb. 10. CD 2/23.

H. H. Mass Constr. Co., Algonquin, Ill., CA, **$424,759**. subway structure, DECATUR, ILL. City, City Hall, Decatur, Ill. Bids Feb. 9, awarded Feb. 23. CD 1/31.

▲ **MICHIGAN**—State Hy. Dpt., Stevens T. Mason Bldg., Pine and Michigan Ave., Lansing,

Mich.—**Sudgen & Siviev, Inc.**, 13100 Cloverdale St., Oak Park, Mich. and **H. J. Brighton**, Farmington, Mich. LB **$528,669**, est. $550,000. (8 bidders) c. conc. on John C. Lodge Expressway and Davison Expressway interchange, UI 82-128 C22-UO (UI 404 102), Wayne Co.;

Mich.—**C. R. Hunt**, Cass City, Mich. LB **$122,494**, est. $140,000. (11 bidders) stabilized aggregate surf. 21 ft. wide with prime and double seal 6.718 mi., on M-33 from M-32 south to Lewiston in Avery, M 60-5 C3-R, Montmorency Co.;

Mich.—**Rieth-Riley Constr. Co.**, 837 Emmett St., Battle Creek, Mich. LB **$186,767**, est. $190,000. (7 bidders) b. conc. Class I 7.45 mi. on US-112 from Bronson southwesterly, M 12-19 C10-R, M 78-5 C10-R, Branch and St. Joseph Counties;

Mich.—**Midland Constr. Co.**, Midland, Mich. LB **$149,312**, est. $150,000. (11 bidders) bit. binder wearing surf. 22 ft. wide 4.18 mi. on M-25 from Finn Rd. east, M 9-13 C2-R, Bay Co.;

Mich.—**Mid American Eng. Corp.**, St. Joseph, Mich. LB **$258,626**, est. $260,000. (15 bidders) aggregate surf. course wid'n. b. conc. leveling wearing course 11.304 mi. M-55, M 51-7 C10-R, Manistee Co.;

Mich.—**Globe Constr. Co.**, Kalamazoo, Mich. LB **$342,696**. est. $360,000. (15 bidders) c. conc. wid'n., b. conc. surf. US-31 from 5½ mi. north of Scottville north to 0.644 mi. of a mile north of county lines, M 51-3 C6-R, M 53-5, Mason and Manistee Counties;

Mich.—**Hodgkiss & Douma**, Petoskey, Mich. LB **$232,435**, est. $240,000. (14 bidders) b. conc. 8.968 mi. on M-68 from west Cheboygan line east from Allasnon west to Cheboygan and Emmett Counties, M 16-24 C4-R, M 24-17 C5-R, Cheboygan and Emmett Counties. Bids Feb. 21. CD 2/9.

BUILDINGS—LB & CA

Narzizi Constr. Co., 822 Portage Tr., Akron, O., CA, $500,000, CHURCH and EDUCATION BLDG. 4-acre site, 2300 block of E. Market St., AKRON, O. Arlington St. Baptist Church, 295 S. Arlington St., Akron, O. CD 3/24.

▲ **Graziano Constr. Co.**, 7321 Franklin Ave., Pittsburgh, Pa. CA Over **$2,000,000**. St. Peters HIGH SCHOOL and CONVENT, MANSFIELD, O. Catholic Diocese of Toledo, 2504 Parkwood St., Toledo, O. William R. Perry, 2882 W. Liberty Ave., Pittsburgh, Pa., archts. Awarded Feb. 18. CD 12/2/52.

▲ **S. N. Nielsen Co.**, 3059 Augusta Blvd., Chicago, Ill., CA, $1,000,000, 5 story bsmnt. Central OFFICE and ENGINEERING BLDG., HAMMOND, IND. Northern Indiana Public Service Co., 5265 Hohman St., Hammond, Ind. Bids Feb. 6, awarded Feb. 20. CD 1/4.

Carroll Constr. Co., 215 W. Chicago Ave., Chicago 10, Ill., CA **$400,000**. HOTEL addn. to service bldg. CHICAGO, ILL. Conrad Hilton Hotel, 7 and Michigan Aves., Chicago 5, Ill. Holabird, Root & Burgee, 180 N. Wabash St., Chicago 1, Ill. archts.

▲ **Clearing Industrial District, Inc.**, 38 S. Dearborn St., Chicago 3, Ill., CA **$1,000,000**. design and construct FACTORY, strip processing, FRANKLIN PARK, ILL. Precision Steel Warehouse Co., 4425 Kinzie St., Chicago, Ill.

† **G. H. Sternberg & Co.**, 1609 Delmar Ave., Granite City, Ill., CA, **$931,667**, family HOUSING, utilities, Granite City Engineer Depot, Serial No. ENG-11-032-56-28, GRANITE CITY, ILL. U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill. Bids Dec. 20, awarded Feb. 17. CD 11/29.

Munao Brothers, 7109 W. Addison St., Chicago, Ill., Own Forces, **$550,000**. 28 HOMES, NORRIDGE ILL.

WEST OF MISSISSIPPI

BUILDINGS—BA

Neb., Lincoln—RESIDENT HALLS—BA 3/14—University of Nebraska, 12 and R Sts., resident halls for College of Agriculture, $980,000. Clark & Enersen, 1415 Sharp Bldg., archts. CD 10/7/53.

▲ **Mont., Bozeman**—HEALTH and PHYSICAL EDUCATION—BA 3/20—State College, Bd. Educ., Helena, circular in-shape egg-shaped dome, 82,700 sq. ft. health and physical education bldg., Montana State College, $1,200,000, Fred F. Willson, 21 W. Babcock, and Oswald Berg, Jr., 119 N. 7 St., archts. CD 2/24.

BUILDINGS—SLC

Tex., Tyler—BANK, etc.—First Citizens National Bank, Tyler, soon lets contract, 8 story bank and office addn., alterations, $500,000. Rob. E. Alexander, Jr., 3704 Abrams Rd., Dallas, archt. Wm. K. Hall, Melba Bldg., Dallas, engr.

HEAVY CONSTRUCTION—LB & CA

▲† **J. A. Tobin Constr. Co.**, 3701 Rainbow Blvd., Kansas City, Kan. LB **$1,827,728**, est. $2,062,502. (8 bidders) runway exten., constr. 2,400 ft. exten. to north-south runway, landing lights for strip and replacement of east-west runway, Whiteman Air Force Base, Inv. 56-58, KNOB NOSTER, MO. U. S. Eng.,

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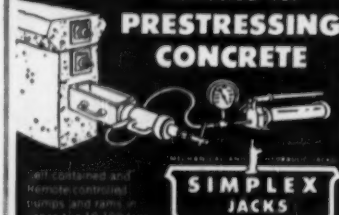
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Federal Office Bldg., Kansas City, Mo. Bids Feb. 20. CD 1/11, under Mo., Sedalia.

▲ **W. B. Carter Constr. Co.**, 1224 N. Broadway, Wichita, Kan. CA $1,033,881. sanitary sewer near Volutsia and Conomore, WICHITA, KAN. City, City Hall, Wichita, Kan. Bids Feb. 7. CD 1/9.

† **Southwest Constructors, Inc.**, P. O. Box 3272, Oklahoma City, Okla. CA $548,970. aircraft hangar, ENG-34-066-56-9, FORT SILL, OKLA. U. S. Eng., Box 61, Tulsa 2, Okla. CD 2/1, under LB.

▲ **TEXAS**—State Hy. Comn., Austin,
Tex.—**P. & L. Equipment Co., Inc.**, P. O. Box 13007, Houston, Tex., CA $738,308, 0.257 mi. T. & N. O. & H. B. & T. R. R. overpass Hy. US 90A, Proj. U-UG-512 (22), Harris Co.;
Tex.—**J. A. Raines, Constr.**, P. O. Box 936, Muskogee, Okla., CA $520,999, 1.429 mi. Brazos River Bridge and approaches, Hy. US 190. S 103 (2), Robertson and Milam Counties. Bids Feb. 21, awarded Feb. 24. CD 2/24, under LB.

TEXAS—State Hy. Comn., Austin,
Austin Bridge Co., P. O. Box 1590, Dallas, Tex., CA $900,429, 2.715 mi. Brazos and San Bernard River Bridge and approach, grading, structures, flexible base, two course surf. tr. Hy. ST 35, Proj. F 442 (7), Brazoria Co. Bids Feb. 20, awarded Feb. 24. CD 2/24, under LB.

▲ **TEXAS**—State Hy. Comn., Austin,
Tex.—**R. C. Buckner**, P. O. Box 609, Jacksonville, Tex. CA $832,606, flexible base, two course surf. tr. 6.733 mi. Hy. ST 7. Proj. F 1106 (10), Houston and Leon Counties;
Tex.—**F. & C. Eng. Co.**, P. O. Box 2426, Houston, Tex. CA $840,160, flexible base, b. conc. 3.321 mi. Hy. US 69. Proj. F 1043 (2), etc., Jefferson Co.;
Tex.—**Schwope Bros., F. M. Reeves & Sons of Austin and Gulf Bitulithic Co.**, 6633 W. Commerce St., San Antonio, Tex., CA $1,061,628, flexible base, b. conc. 11.603 mi. Hy. US 81. Proj. FI 264 (10), Bexar Co. Grand total $2,734,394. Bids Feb. 21, awarded Feb. 24. CD 2/24, under LB.

▲ **TEXAS**—State Hy. Comn., Austin,
Tex.—**Gulf Bitulithic Co.**, P. O. Box 2572, Houston, Tex. CA $726,122, c. conc. pavement, widen foundation course and b. conc. pavement 14.324 mi. Hy. US 90A, Proj. C 27-4&6-12&19, Wharton and Fort Bend Counties;
Tex.—**Olene Hanson**, 4906 Griggs Rd., Houston, Tex., CA $537,746, flexible base, two course surf. tr. 11.182 mi. Hy. US 69. Proj. F 277 (8), Angelina Co.;
Tex.—**Killian-House Co.**, 4600 Broadway, San Antonio, Tex., CA $811,730, flexible base, hot mix b. conc. 2.075 mi. Hy. Loop 13. Proj. V 1075 (5), Bexar Co. Grand total $2,075,598. Bids Feb. 20, awarded Feb. 24. CD 2/24, under LB.

TEXAS—Texas Turnpike Auth., 214 First Federal Savings Bldg., Austin, Zone 1,
J. W. Moorman & Son, P. O. Box 270, Belton, Tex., CA $613,408. Contr. D-FW 46, continuous rolled beam and two-hinged steel arch bridges at Fort Worth Cutoff, Hampton Rd. and Lone Star Cement Plant, Dallas Co. Bids Feb. 20, awarded Feb. 24. CD 2/24, under LB.

▲ **TEXAS**—Texas Turnpike Auth., 214 First Federal Savings Bldg., Austin, Zone 1,
Trinity Road & Bridge Co. and Trinity Constr. Co., P. O. Box 1755, Dallas, Tex., CA $3,113,315, Contr. D-FW-35, grading, drainage structures and paving 1.6 mi. from Sylvan Ave. to connection with proposed Dallas Expressways, Dallas Co. Bids Feb. 21, awarded Feb. 24. CD 2/27, under LB.

▲ **TEXAS**—Texas Turnpike Auth., 214 First Federal Savings Bldg., Austin, Zone 1,
Tecon Paving Co., 1201 Main St., Dallas, Tex., CA $1,780,000. Contr. D-FW 42, grading, drainage 3.707 mi. from Chalk Hill Rd. to Sylvan Ave., Dallas Co. Bids Feb. 20, awarded Feb. 24. CD 2/24, under LB.

▲† **Sound Constr. & Engineering Co.**, 1300 Aloha St., Seattle, Wash. LB $3,017,840. (3 bidders) 27 buildings, Glasgow Air Force Base, ENG-45-164-56-7, GLASGOW, MONT. U. S. Eng., City-County Airport, Walla Walla, Wash. Bids Feb. 24. CD 2/10.

F. J. Kirchhof Constr. Co., 700 Lawrence St., Denver, Colo., CA $537,071. general contract stadium addn., BOULDER, COLO. University of Colorado, Campus, Boulder, Colo. Bids Feb. 15. CD 1/24.

▲† **Robert E. McKee General Contr., Inc.**, P. O. Box 651, Albuquerque, N. M. LB $1,431,099. taxiways, harmonization range, airfield lighting, Walker Air Force Base, ENG-29-005-56-58, ROSWELL, N. M. U. S. Eng., P. O. Box 1538, Albuquerque, N. M. Bids Feb. 16. CD 1/31.

BUILDINGS—LB & CA

▲ **Ryan Lumber Co.**, Hibbing, Minn. CA $2,000,000. general constr. SHOPPING CENTER and NIGHT CLUB near 78 St. and Cedar Ave., BLOOMINGTON (P. O. MINNEAPOLIS), MINN. A. E. Ellis, 1835 E. 88 St., Minneapolis, Minn. CD 7/29.

Ben Neitge Constr. Co., Inc., Mankato, Minn. CA $648,461. general constr. 4 story GYMNASIUM and AUDITORIUM, MANKATO, MINN. St. Peter & St. Paul Catholic Church, Rev. C. DuMuth, Mankato, Minn. Bids Feb. 8, awarded Feb. 21. CD 2/23, under LB.

Johnson-Gillanders Co., 424 N. 3 St., Grand Forks, N. D., CA $455,140 general contract, men's RESIDENCE HALL, University of North Dakota, GRAND FORKS, N. D. State Bd. Higher Educ., Bismarck, N. D. Bids Feb. 9. CD 1/25.

International Eng. Constr. Co., Inc., 4908 Travis St., Beaumont, Tex., CA $445,150, 6 story OFFICE, BEAUMONT, TEX. Jefferson Building Office, c/o

(Continued on page 116)

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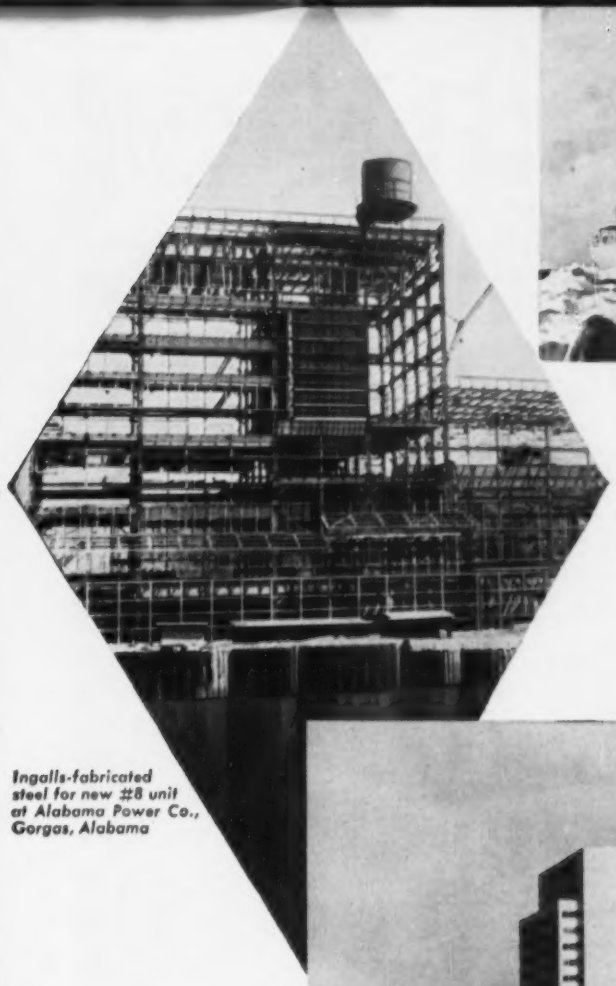

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(Continued from page 114)

William Tamminga, archt., 3416 Louisiana St., Houston, Tex. CD 2/21.

▲ **Henger Constr. Co.**, Dallas Natl. Bank Bldg., Dallas, Tex., CA, $2,000,000. 300-room HOTEL; CA $4,750,000 DEPARTMENT STORE, DALLAS, TEX. Bachman Development Corp., c/o T. Fritz Stewart, Merchants Commerce Bldg., Dallas, Tex. CD 2/23.

▲ **Henry C. Beck Co.**, 607 First Natl. Bank Bldg., Dallas, Tex., CA $6,678,077. 20-story BANK and OFFICE, SAN ANTONIO, TEX. National Bank of Commerce, Soledad and Travis Sts., San Antonio, Tex. Bids Feb. 14. CD 2/23, under LB.

▲ **Fisher Constr. Co.**, Box 6325, Houston, Tex., CA, $1,017,600 on alt. RESIDENCES, DORMITORIES with DINING HALLS, HUNTSVILLE, TEX. Sam Houston State Teachers College, Huntsville, Tex. Bids Feb. 7. CD 2/13, under LB.

▲ **Hitz Constr. Co.**, 2111 Fourth Ave. N., Billings, Mont. LB $1,583,600. (5 bidders) general constr. 8 story, 100x140 ft., concrete, steel COURT HOUSE, BILLINGS, MONT. Yellowstone Co., Courthouse, Billings, Mont. Bids Feb. 21. CD 1/17.

Hightower & Lubrecht, Missoula, Mont. LB $594,248. (4 bidders) addns. to men's DORMITORY (Craig Hall), women's DORMITORY (Corbin Hall), MISSOULA, MONT. Montana State University, State Bd. Educ., Helena, Mont. Brinkman & Lenon, Strand Theatre Bldg., Kalispell, Mont., archts. CD 9/21/54.

C. B. Lauch Constr. Co., 5404 Cedar St., Boise, Idaho. LB $939,765. (4 bidders) two 3 story, X-shaped RESIDENCE HALLS, MISSOULA, MONT. State University, State Bd. Educ., Helena, Mont. CD 1/13.

▲ **George A. Fuller & Co.**, 1700 Broadway, Denver, Colo., CA Est. $5,000,000, 1 story, 500,000 sq. ft. brick, steel, concrete guided missile PLANT, near DENVER, COLO. Glenn L. Martin Co., 1845 Sherman St., Denver, Colo. CD 12/14.

Hensel-Phelps Constr. Co., P. O. Box 604, Greeley, Colo., LB $437,300. 2 story, bsmnt., 75x190 ft., TELEPHONE EXCHANGE alterations, GREELEY, COLO. Mountain States Telephone & Telegraph Co., 931 14 St., Denver, Colo. T. H. Buell & Co., 730 14 St., Denver, Colo., engrs.

FAR WEST

BUILDINGS—BA

Calif., Lake Arrowhead—HIGH SCHOOL, etc.—BA 3/20—Rim of the World High School Dist., Lake Arrowhead, high school and elementary school addns. $800,000. Daniel Mann, Johnson & Mendenhall, 4201 Sunset Blvd., Los Angeles, archts. CD 1/13, under LB.

▲ **Ore., Astoria**—HIGH SCHOOL—BA 5/8—Astoria School Dist., Astoria, high school. $1,000,000. Stewart & Richardson, 219 S. W. Stark St., Portland, and E. E. Isacson, Astoria, archts. CD 9/22/54.

HEAVY CONSTRUCTION—SLC

▲ **Oregon**—GAS LINES—Portland Gas & Coke Co., 920 S. W. 6 St., Portland, soon lets contract laying 30 mi. gas lines in west hills area, Portland, Multnomah Co. $1,100,000. CD 5/23.

BUILDINGS—SLC

▲ **Calif., San Francisco**—MEMORIAL—Grand Lodge of Masonic Order, c/o Albert F. Roller, archt., 1 Montgomery St., soon lets contract memorial bldg. between Taylor and Jones Sts. $5,000,000. J. H. Brunnier, Sharon Bldg., engr. CD 7/20/53.

▲ **Wash., Spokane**—DEPARTMENT STORE—Bon Marche, Main and Howard Sts., soon lets contract 5 story, bsmnt., rein.-con. Bon Marche Department Store addn., for Allied Department Stores, 401 Fifth Ave., New York, N. Y., $2,500,000. CD 2/21.

HEAVY CONSTRUCTION—LB & CA

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento.

C. K. Moseman, 727 Barron Ave., Redwood City, Calif., CA, $1,568,300. grading, paving 1.2 mi. freeway with ramps, 6 bridges, 3 pumping plants, U. S. 99 between Cherry Ave. and Princeton Ave. in Fresno, Fresno Co. Bids Feb. 8, awarded Feb. 21. CD 2/14, under LB.

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento.

Charles L. Harney, Inc., 575 Berry St., San Francisco, Calif., LB, $1,859,283 (4 bidders) second unit Embarcadero Freeway in downtown San Francisco, San Francisco Co. Bids Feb. 23. CD 1/27.

▲ **McGuire & Hester**, 796 66 Ave., Oakland, Calif., LB, $1,388,488, sewage disposal plant, FAIRFIELD, CALIF. Fairfield-Suisun Sewer Dist., 740 Texas St., Fairfield, Calif. Solano Engineers, 50 Lincoln Hy., Vallejo, Calif., engrs. CD 11/17/54.

Piombo Constr. Co., P. O. Box 935, San Carlos, Calif., CA, $758,070, excavation, embankment at South Basin Sunset Reservoir, Spec. 742, SAN FRANCISCO, CALIF. City and San Francisco Co., P. Utilities Comn., City Hall, San Francisco, Calif. CD 11/11.

BUILDINGS—LB & CA

State Building Board, 419 State Capitol, Salt Lake City, Utah, rejected bids Jan. 31, VOCATIONAL-EDUCATIONAL Bldg. for Weber College, OGDEN, UTAH. LB $664,283. Will re-advertise. CD 2/8, under LB.

▲ **Phoenix Union High School Dist.**, 3010 N. 11 Ave., Phoenix, Ariz., reject bids HIGH SCHOOL, PHOENIX, ARIZ. LB $1,300,299. CD 2/23, under LB.

▲ **H. Anderson**, 8028 Bagley Ave., Seattle 3, Wash., CA, $1,500,000, RETIREMENT HOME addn., DES MOINES, WASH. Westley Gardens Corp., Des Moines, Wash. Bain & Overturf, 700 Marion St., Seattle, Wash., archts. CD 2/24.

▲ **MacDonald Building Co.**, 1517 S. Tacoma Way, Tacoma, Wash., LB $5,620,627, general contract, COUNTY-CITY BLDG., TACOMA, WASH. Pierce Co. Co., Court House, Tacoma, Wash. Bids Feb. 21, CD 2/15;

Urban Plumbing & Heating Co., 103 S. 28 St., Tacoma, Wash., LB, $1,469,199, mechanical contract, (Tacoma, Wash.).

C. W. Devon, Box 37, Garden Grove, Calif., LB, $416,000, est. $400,000 (7 bidders) Anaheim HIGH SCHOOL addns., ANAHEIM, CALIF. Anaheim School Dist., Anaheim, Calif. Bids Feb. 14. CD 2/6.

▲ **Compton Land Co.**, 7862 Western Ave., Los Angeles, Calif., Owner Builds, $1,443,750, 175 frame, stucco DWELLINGS, Tract 21983, COMPTON, CALIF.

▲ **The Oliver Rosseau Organization**, 1373 Jackson St., Hayward, Calif. Owner Builds. $6,000,000. Woodward Estates RESIDENTIAL DEVELOPMENT, incl. 300 homes, 350-acre Hilly Tract, near HAYWARD, CALIF.

D. & E. Corp., 8906 W. Olympic Blvd., Beverly Hills, Calif., CA $425,000. 50 frame, stucco DWELLINGS. Wolfe, Michelson and Bigelow Sts., etc. LAKEWOOD, CALIF. Story Building Co., 8906 W. Olympic Blvd., Beverly Hills, Calif.

Morley Building Co., 7700 Sunset Blvd., Los Angeles, Calif., LB $759,000, (6 bidders) two gymnasiums at Narbonne HIGH SCHOOL, Lomita, LOS ANGELES, CALIF. Los Angeles Bd. Educ., 1425 S. San Pedro St., Los Angeles, Calif. Bids Feb. 15. CD 2/9.

S. Ocshir, 10938 Ventura Blvd., Los Angeles, Calif., CA, $599,200, 56 frame, stucco DWELLINGS, Double Grove Ave. and Dubeson St., PUENTE, CALIF. Samson Development Co., 10938 Ventura Blvd., Los Angeles, Calif.

▲ **Bauer & Lesser**, Capy Circle and Arroyo Dr., South San Francisco, Calif., Owner Builds, $5,000,000. 200-HOME Subdivision, 50-acre tract, Heather Highlands, SAN CARLOS, CALIF. CD 9/8.

▲ **Oliver Rousseau Organization**, 1373 Jackson St., Hayward, Calif., Owner Builds. $1,080,000. 40 HOME SUBDIVISION, Pastel Heights Tract, SAN FRANCISCO, CALIF. Martin Williams, 1650 Castro St., Hayward, Calif., engr.

▲ **Oliver Rousseau Organization**, 1373 Jackson St., Hayward, Calif., Owner Builds. $2,619,000. 182-HOME SUBDIVISION, Northgate Tract Unit I, SANTA CLARA, CALIF. Martin Williams, 1650 Castro St., Hayward, Calif., engr.

▲ **Larwin Co., 8692 Wilshire Blvd., Los Angeles, Calif.**, CA, $1,303,800, 123 frame, stucco DWELLINGS, Walterall and Dupage Aves. and Arnold St., WHITTIER, CALIF. Torrey Homes, Rialto Crest, 8692 Wilshire Blvd., Beverly Hills, Calif. Palmer & Krisel, 11757 San Vicente St., Los Angeles, Calif., archts.

Henderson Constr. Co., 33 Ritch St., San Francisco, Calif., LB $405,142, (8 bidders) Holy Rosary Parish Parochial SCHOOL and CONVENT, WOODLAND, CALIF. Owner, c/o Cox & Liske, Whitson W. Cox, archts., 926 "J" St., Sacramento, Calif. CD 7/16/47.

CANADA

HEAVY CONSTRUCTION—BA

▲ **Alta., Edmonton**—BA 3/19—City, City Hall, sewage treatment plant. $1,750,000. Plans deposit $25. Gore & Storrie Ltd., 1130 Bay St., Toronto, Ont., engrs. CD 10/21/53.

BUILDINGS—BA

Alta., Edmonton—OFFICE—BA 3/15—International Harvester Co. of Canada Ltd., 200 Hilyard Ave., Hamilton, Ont. 1 story, 240x260 ft., structural steel, brick, concrete block warehouse and office, $600,000. & Kyles, 247 John St. S., Hamilton, Ont., archts. CD 12/15.

BUILDINGS—SLC

▲ **Que., Bristol**—MILL—Steel Co. of Canada Ltd., Wilcox St., Hamilton, Ont., soon lets contract concentration and refining mill at ore development. Total est. $15,000,000. Foundation of Canada Eng. Corp. Ltd., 200 Bloor St. E., Toronto, Ont., is supervising. Western Knapp Eng. Co., Hibbing, Minn., U.S.A., engrs. CD 4/8.

HEAVY CONSTRUCTION—LB & CA

▲ **ALBERTA**—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont.,

J. A. Moulson Constr. Ltd., 45 St. and 17 Ave. E., Calgary, Alta., CA, $1,325,464, grading, provision of culverts, base course and prime coat 10 mi. Trans-Canada Hy. Banff National Park, Banff. Bids Feb. 15. CD 2/24, under LB.

▲† **Grove, Shepherd, Wilson & Kruge, Inc., Angus Robertson, Ltd. and T. D. K. Rowney**, 400 Madison Ave., New York 17, N. Y., U.S.A., LB $10,479,717 (3 bidders) addnl. Naval facilities, FY-55-56, U. S. Naval Station, NOY 89833, Spec. 46820, 49622, 49625 and 49627, ARGENTIA, NEWFOUNDLAND. Director, Atlantic Div. Bureau Yards & Docks, 90 Church St., New York, N. Y., U.S.A. Bids Feb. 23. CD 1/19.

BUILDINGS—LB & CA

Brock Realty Ltd., 38 King St. W., Brockville, Ont., Owner Builds, $450,000, 35-unit HOUSING, BROCKVILLE, ONT.

(Continued on page 119)

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Red D Mix's new fleet of GMC's helps speed in-a-hurry jobs like the 30,000-yard delivery for K.C.'s new municipal parking garage

THESE RUGGED GMC W624 TANDEMS are some of the 20 new GMC haulers handling Red D Mix's fast-moving, tightly scheduled jobs throughout the Kansas City, Mo. area. They recently completed work on Kansas City's municipal parking garage — a multi-floor, block-square structure requiring 30,000 yards of concrete. Red D Mix helped finish this massive job in record time.

SPEEDING THEIR HEFTY 6-YARD LOADS from batch plant to job site, these GMC W624's set a crackling pace. The model is one of 19 new Blue Chip tandems blanketing the 28,000 GVW-90,000 GCW range. They offer a choice of gasoline and 2-cycle Diesel power. And 9 of them are available with cost-cutting Hydra-Matic.*

NOT EVEN THE ROUGHEST GOING can stop these GMC's. Their high-torque 190-h.p. engine packs more than ample reserve for off-the-road maneuvering. And the W624 has GMC's new oversized axles — 11,000 lb. front and 34,000 lb. rear. Tires are 9.00/20's. The rig's rated for 42,000 GVW-65,000 GCW truck-work.

Hydra-Matic standard on many models; optional at extra cost on some others

GMC TRUCK & COACH — *A General Motors Division*

(Continued from page 116)

▲ **W. B. Sullivan Constr. Ltd.**, O'Connor Postal Depot, Toronto, Ont., CA, $1,186,307 (8 bidders) 4 story, bsmnt., 150x200 ft., rein.-con., brick HOSPITAL, COOKSVILLE, ONT. South Peel Hospital Bd., Port Credit, Ont. Bids Feb. 10, awarded Feb. 17. CD 1/23.

Sterling Constr. Co., Ltd., 2494 Riverside Dr. W., Windsor, Ont., CA, $823,522, PHYSICAL TRAINING BLDG., Wolseley Barracks, LONDON, ONT. Defence Constr. Ltd., 56 Lyon St., Ottawa, Ont. Bids Jan. 31. CD 1/11.

▲ **Eastern Constr. Co. Ltd.**, Airport Rd., Windsor, Ont., CA, $2,000,000, PLANT EXPANSION, POINT EDWARD, ONT. Electric Auto-Lite Ltd., 704 Mara St., Point Edward, Ont. Awarded Feb. 15.

▲ **Catalytic Constr. of Canada Ltd.**, 600 Vidal St. S., Sarnia, Ont., CA, est. $1,000,000. 2 story, steel frame, brick ethanolamien PLANT with pump room, control room, office, washrooms, SARNIA, ONT. Dow Chemical Co. of Canada Ltd., 600 University Ave., Toronto, Ont. Bids Feb. 15, awarded Feb. 17. CD 11/21.

▲ **Anglin-Norcross Ontario Ltd.**, 224 Davenport Rd., Toronto, Ont., CA, $4,750,000, 12 story 91x130 ft., rein.-con., structural steel frame OFFICE with 8 story PARKING GARAGE, TORONTO, ONT. Eleven Adelaide St. W. Ltd., c/o Bregman & Hamann, archts., 7 Adelaide St. E., and Harry B. Kohl, 1407 Yonge St., both Toronto, Ont. CD 1/4.

▲ **Millsdale Constr. Co., Ltd.**, 5950 Cote des Neiges Rd., Montreal, Que., Owner Builds, $1,250,000. HOUSING, MONTREAL, QUE. Emilien Bujold, 674 Molson St., Montreal, Que., archt.

▲ **Smith Bros. & Wilson Ltd.**, 524 Second Ave. N., Regina, Sask., CA, $1,258,367, R.C.M.P. BARRACKS BLOCK "B", REGINA, SASK. Dept. P. Wks., Hunter Bldg. Ottawa, Ont. CD 2/24, under LB.

AMERICAN ABROAD

BUILDINGS—LB & CA

† **Paul Y**, Hong Kong, China, CA $806,400. OFFICE BLDG., HONG KONG, CHINA. State Dpt., Foreign Bldg., Wash., D. C. Bids Nov. 8. CD 8/24.

LATIN AMERICAN

HEAVY CONSTRUCTION—LB & CA

▲ **GUATEMALA**—Bureau P. Rds., Dpt. Commerce, Inter-American Hy. Program, 18 and F Sts. N.W., Wash. 25, D. C.,

Guatemala—**Thompson-Cornwall Inc.**, Chrysler Bldg., New York, N. Y., U.S.A., CA $3,196,809 Proj. 19;

Guatemala—**Fisher Contg. Co.**, 2201 S. 19 Ave., Phoenix, Ariz., U.S.A., CA $2,357,749 Proj. 20, grading, draining, etc. between Los Encuentros and San Cristobal and between San Francisco Alto ad Chiquival. Bids Jan. 25, awarded Feb. 23. CD 1/27, under LB.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Wash., Seattle**—City, City-County Bldg., Seattle, Zone 4, reservoir, pumping station and pipe line in Bitter Lake Area, $735,000; storage tank at 4 Ave. S.W. and S.W. 112 St., $427,000; storage tank at Richmond Highlands, $215,000. J. R. Heath, water supt.

SEWERS, WASTE DISPOSAL

▲ **Md., Glen Burnie**—Anne Arundel Sanitary Comn., Glen Burnie, sewage treatment plant, sewerage sys. $3,900,000.

O., Cleveland—Comrs., Cuyahoga Co. Court House, Zone 13, sewers to connect 4 eastern suburbs to Hilltop Sewer. $630,000. John Puzenski, Standard Bldg., Zone 13, co. sanitary engr. CD 4/14/54

BRIDGES

▲ **MISSOURI-ILLINOIS**—Jefferson Barracks Bridge Association, c/o 8899 S. Lindbergh Blvd., St. Louis County 23, Mo.,

constr. vehicular bridge across Mississippi River between St. Louis Co., Mo. and Monroe Co., Ill. adjacent to Columbia, Ill. $3,000,000, Sverdrup & Parcel, Syndicate Trust Bldg., 917 Olive St., St. Louis 1, Mo., consult. engrs.

STREETS AND ROADS

▲ **Ill., Chicago**—Cook Co., County Bldg., Chicago, Zone 2, Northwest Expressway, incl. 26 grade separations, 4 bascule bridges over Chicago River, drainage and pumping facilities, $30,907,000;

Congress Expressway between Manheim and Wolf Rd., and from Laramie Ave. in Chicago to 1 Ave. in Maywood, $20,878,000;

resurf. streets in Chicago and roads in county, incl. 4.2 mi. Irving Park Rd., 6 mi. Pulaski Rd., Wentworth Ave. 2.55 mi. between 167 St. and State Rd., Des Plaines Rd. 3.75 mi. from Golf Rd. to Milwaukee Ave., $8,747,000.

Kingery Expressway, $1,000,000.

Calumet Expressway, $825,000. Wm. J. Mortimer, hy. engr.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Metropolitan Dist. Comn., Parks Div., 20 Somerset St., Boston,

Medford—Fellsway from Wellington Bridge to Roosevelt Circle (approx. 3 mi.) to be converted to 6-lane road, divided by 10 ft. wide landscape strip and 8 ft.

(Continued on page 122)

Job site concrete at rock bottom cost

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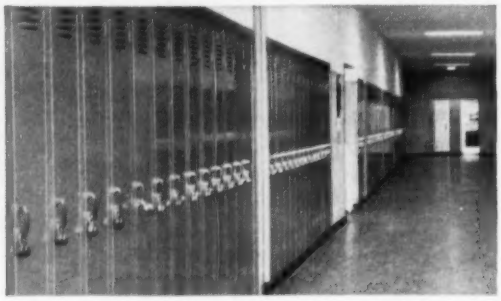

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(Continued from page 119)

parking strip outside each 3 lane roadway. $1,250,000. CD 6/20/52.

▲ **NEW YORK**—State, Dpt. P. Wks., The Gov. Alfred E. Smith State Office Bldg., Albany,

Orange Co.—8.8 mi. arterial route system in and near Newburgh. $9,853,000.

▲ **OHIO**—State Hy. Dpt., Columbus,

Trumbull Co.—by-pass of Rtes 5 and 45 around city, incl. bridge over Mahoning River at Warren. $3,000,000. Michael Baker & Assoc., Rochester, Pa. consult. engrs.

▲ **Tex., Dallas**—City, City Hall, 6-lane divided roadway proj., Illinois Ave. $750,000; 6-lane divided roadway proj., Sylvan Ave. $875,000. Koch & Fowler, 3900 Lemmon St., consult. engrs. CD 1/31.

EARTHWORK, WATERWAYS

▲ **Georgia**—Georgia Power Co., 52 Fairlie St. N.W., Atlanta, James McCoy Oliver Dam on Chattahoochee River, at Columbus. $13,000,000.

▲ **Ill., Rockford**—City, City Hall, flood control work on Kent Creek, storm sewers and drainage ditches. $18,000,000. Warren & Van Pragg, 253 S. Park St., Decatur, consult. engrs.

AIRPORTS

Mass., East Boston—AIRPORT IMPRVS.—State, State Airport Management Bd., Logan Airport, aprons and Stations 6 and 7, $550,000; electric sub-station No. 2, $135,000; maintenance bldg., $300,000. Logan International Airport. CD 4/22/52.

▲† **Mo., Grandview**—HOSPITAL—U. S. Eng., 1800 Federal Office Bldg., Kansas City, Mo., hospital, Grandview Air Force Base. $1,400,000. Bids About August. CD 3/3/53.

LATIN AMERICA

Mexico, Monterrey—BANK—Banco Nacional de Mexico, Mexico City, plans by Gustavo A. de B. Struck, Articulo 123-97-601, Mexico City, bank branch bldg. $600,000.

AMERICANS ABROAD

▲ **Cambodia**—Govt. of Cambodia, Pnom-Penh., constructing roads linking Pnom-Penh with new seaport on Gulf of Siam. $15,000,000. Contract may be awarded in April to an American company. Michael Baker, Jr., Inc., Rochester, Pa., U. S. A., consult. engr.

▲ **India**—Govt. of India, Delhi, preliminary study of heavy water and nitrogen fertilizer plant in Bhakra-Nagal area, on Sutlej River, North India. Multi-Million. Vitro Corp., 261 Madison Ave., New York 16, N. Y., U. S. A. consult. engrs.

PUBLIC BUILDINGS

▲ **Ala., Demopolis** — HOUSING — Demopolis Housing Auth., Demopolis, plans by Linton Young, Candler Bldg., Atlanta, Ga., housing. $1,000,000.

▲ **Calif., Garden Grove**—SCHOOLS—Garden Grove Union High School Dist., Garden Grove, $1,500,000 bond election Mar. 29, schools.

▲ **Calif., Hayward** — SCHOOLS — Hayward Union High School Dist., 22300 Foothill Blvd., voted $3,000,000 bonds, Castro Valley, Mount Eden, South Mount Eden, Arroyo High School addns. San Lorenzo and renovation of Hayward High School. Est. $11,000,000. CD 10/18.

▲ **Calif., Lancaster**—SCHOOLS—Antelope Valley Union High School Dist., Lancaster, $4,000,000 bond election May 18, schools.

▲ **Calif., Los Angeles**—NURSES HOME—Bd. Supervs. Los Angeles Co., Hall of Records, plans by Adrian Wilson, 816 W. 5 St., and Paul R. Williams, 3757 Wilshire Blvd., 11 story nurses home on grounds of County General Hospital, $4,500,000. CD 11/5/54.

▲ **Calif., Los Gatos**—SCHOOL—Los Gatos Union High School Dist., Los Gatos, high school. $1,650,000. CD 11/25/53.

▲ **Calif., Woodland and West Sacramento**—SCHOOL—Woodland Union High School Dist., Woodland, defeated bonds Feb. 16, completing Woodland High School and either rehabilitate existing James Marshall High School or constr. new high school. $3,250,000. CD 12/29.

▲ **Colo., Boulder**—DORMITORIES—University of Colorado, Boulder, dormitory, $2,667,000; dormitory, $2,667,000; dormitory, $925,000.

▲ **Conn., West Hartford**—SCHOOL—Town, 51 Memorial Rd., plans by Jeter & Cook, 36 Pearl St., Hartford, Richmond Lane Elementary School. $1,250,000. Robert W. Loomis, 32 Maple Ave., Windsor, consult. engr. CD 6/28/54.

▲ **Del., Newark**—DORMITORIES, etc.—University of Delaware, Newark, plans by McKim, Mead & White, 101 Park Ave., New York, N. Y., 4 dormitories, $2,000,000. CD 3/11/46; plans by Voorhees, Walker, Smith & Smith, 101 Park Ave., New York, N. Y., engineering school bldg. $900,000, CD 3/10; plans by Trautwein & Howard, 1411 Walnut St., Phila., Pa., dining hall, student bldg. $500,000, CD 10/21/54.

▲ **Del., Stanton**—SCHOOL—Stanton School Dist., Stanton, Junior High School. $1,000,000.

▲ **Iowa, Council Bluffs** — SCHOOL EXPANSION — Bd. Educ., voted $1,250,000 bonds, school expansion. CD 1/20.

▲† **Kan., Fort Leavenworth**—HOSPITAL—U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo., station hospital. $2,700,000. Bids about June. CD 9/12.

▲ **Kan., Salina**—SCHOOL—Bd. Educ., F. L. Reynolds, bus. mgr., $1,250,000 bond election Mar. 27, Junior High School for South Salina; addns. to Heusner and Gleniffer Schools. CD 12/19.

▲† **La., Lafayette**—POST OFFICE, etc.—General Services Admin., 1114 Commerce St., Dallas, Tex., plans by H. J. Lagroue, 317 W. Main St., Lafayette, and Barron, Heinberg & Brocato, Box 1186, Alexandria, post office and federal office, $1,095,000. CD 12/6/49.

▲ **Mich., Adrian**—SCHOOL—City, Bd. Educ., voted $5,400,000 bonds Feb. 16, high school, Junior High School addn., Louis C. Kingscott & Assoc., 511 Monroe St., Kalamazoo, archts. CD 12/15.

▲ **Mich., Highland Park**—HOSPITAL—City, City Council, 30 Gerald St., Zone 3, $1,700,000 bond election June 12, Highland Park General Hospital. CD 2/15.

▲ **Mich., Livonia**—SCHOOL—City, Bd. Educ., Livonia Pub. Schools, Benton Yates, supt. Schools, $8,000,000 bond election Mar. 20, two Junior High Schools, six elementary schools. CD 5/11/54.

▲ **Minn., Minneapolis**—AUDITORIUM—City, L. Johnson, clk., A. Olson & M. Dahl, co.-mgr. of Minneapolis Municipal Auditorium, expand auditorium, addition of 170,450 sq. ft., East Grant St. between Stevens and Third Ave. South, $4,000,000. CD 8/17.

▲ **Mont., Bozeman**—HEALTH AND PHYSICAL EDUCATION—State College of Educ., Bozeman, plans by F. F. Willson & Oswald Berg, Jr., Bozeman, 82,700 sq. ft. health and physical education bldg. State College. $1,250,000. CD 7/20.

N. J., Cape May—SCHOOL—City, City Hall, Regional High School. $750,000. CD 10/31/46.

▲ **N. J., Lindenwold**—SCHOOL—Lindenwold Bd. Educ., plans by George Von Uffle, Haddonfield, Joint Junior-Senior High School. $1,000,000.

N. J., Somers Point—SCHOOL—Linwood Bd. Educ. & Somers Point Bd. Educ., regional high school. $750,000.

▲ **N. J., Toms River**—JAIL—Bd. Freeholders, Ocean Co., Toms River, county jail, general offices, etc. $1,000,000.

▲ **N. J., Trenton**—SCHOOL, etc.—Bd. Educ., 9 S. Stockton St., elementary school, John Fitch Way, $800,000; administration bldg. $350,000.

N. Y., Alexander—SCHOOL—Alexander Central School, $900,000 bond election Apr. 5, elementary school, repairs to main bldg.

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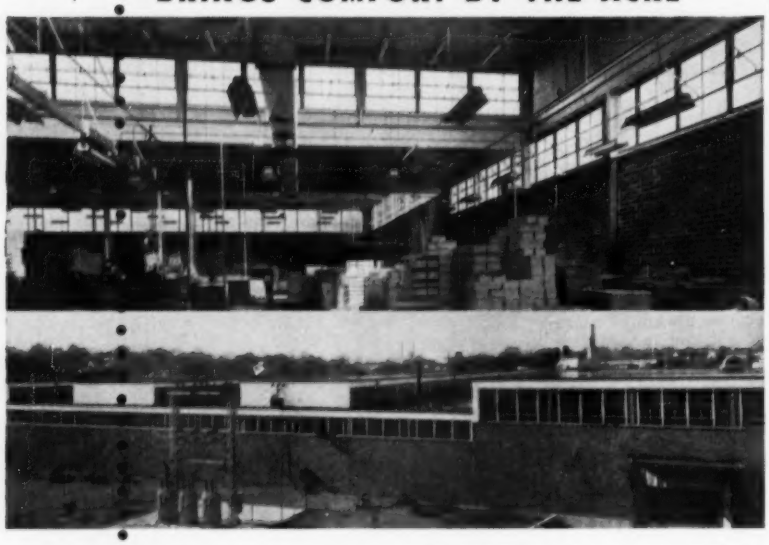

Moscowitz, Willmer & Millkey, Architect. J. A. Jones, Contractor.

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▲ **N. Y., Lackawanna** — SCHOOLS — School Bd., bond election Mar. 15, high school, **$3,200,000**; Lincoln Annex School addn., **$450,000**. CD 3/1/55.

▲ **N. Y., Lewiston**—SCHOOL—Lewiston-Porter Central School, Lewiston, plans by William Lurkey, 997 Main St., Buffalo, Junior High School with swimming pool, **$1,500,000**. Constr. in July.

▲† **N. Y., New York**—OFFICE—General Services Admin., P. Bldgs. Service, Ave. F. betweetn 18 and 19 Sts. N.W., Wash., D. C., plans by Kahn & Jacobs, 2 Park Ave., New York, Zone 16, office for United State Mission to United Nations in area between 42 and 47 Sts. and First and Second Aves. **$3,300,000**. Kelly & Gruzen, 80 Fifth Ave., New York, Zone 11, engrs. CD 8/9.

N. Y., Wilson—SCHOOL—Wilson Central School, plans by Duane Lyman, 505 Delaware Ave., Buffalo, grade school in Wilson, expansion and imprvs. of Ransomville, **$765,000**. CD 12/21/44.

▲ **N. C., Greenville**—DORMITORY, etc.—East Carolina College, Greenville, plans by Eric G. Flannagan, Henderson, dormitory and dining facilities. **$1,425,000**. CD 2/15.

▲ **Pa., Lansdowne**—SCHOOL—Lansdowne-Aldon Joint School System, plans by Martin, Stewart & Noble, 117 S. 17 St., Phila., high school addn. **$1,125,000**. CD 5/6.

▲ **Pa., Newtown**—SCHOOL—Rock High School Dist. Joint School Bd., plans by Heacock & Platt, 1505 Race St., Phila., high school addn., **$1,000,000**. Bids in May.

▲ **Pa., Phila.**—SCHOOL—Bd. Educ., 21 and Winter Sts., plans by George M. Ewing Co., Western Saving Fund Bldg., Junior High School, 11 and Dauphin Sts. **$3,500,000**.

▲ **Pa., Phila.**—HOUSING—Phila. Housing Auth., 42 S. 15 St., plans by Kneedler-Mirick & Zantzinger, 12 S. 12 St., Oxford Village Proj. No. 2, 605 units, Howell and Algon Sts. **$9,750,000**, Barton & Martin, 12 S. 12 St., consult. engrs. CD 11/29/55.

Pa., Pleasant Valley—SCHOOL—Palisades Joint School Bd. plans by H. F. Everett & Assoc., 512 Hamilton St., Allentown, Palisades High School addn., Bucksville, **$500,000**, S. W. Herring, 512 Hamilton St., Allentown, consult. engrs. CD 11/24/54.

▲ **Pa., Plymouth Meeting**—SCHOOL—Plymouth-Whitemarsh School Bd. plans by Joseph Wigmore, 117 S. 17 St., Phila., Plymouth-Whitemarsh Joint High School, 1629 Chestnut St. **$1,665,000**. Lambert McGee & Costello, Inc., 1629 Chestnut St., Phila., consult. engr. CD 11/6/53.

▲ **Tex., Freeport**—SCHOOLS—Brazosport Independent School Dist., Freeport, elementary school east of Hy. 288 in Clute, **$500,000**; high school auditorium, **$800,000**; elementary school, Loop Rd. between Clute and Lake Jackson, **$600,000**; group of classrooms, **$450,000**, a 3 year program.

▲ **Tex., Orange**—HOUSING—Orange Housing Auth., P. O. Box 1787, Orange, plans by Matkin & Fitch, 4101 San Jacinto St., Cleburne, Houston, Zone 4, housing **$1,000,000**. CD 11/14/51.

▲ **Tex., Sherman**—SCHOOLS—Sherman Independent School Dist., Sherman, bond election Mar. 24, Junior High School, **$970,000**; elementary school, **$450,000**; 3-unit classroom wings, **$375,000**. CD 6/4/52.

▲ **Va., Fairfax** — SCHOOLS — Fairfax Co. Bd. Educ., Court House, plans by Willgoos & Chase, 300 Montgomery St., Alexandria, elementary school, Springfield Estates, **$553,500**; Rose Hill Elementary School, **$553,500**; plans by Bailey & Patton, 1408 N. Fillmore St., Arlington, elementary school, Germantown Rd., **$430,380**; plans by Hayes, Seay, Mattern & Mattern, 1615 Franklin Rd. S.W., Roanoke, Glen Forest Elementary School, **$461,160**; North Graham Rd. Elementary School, **$461,100**, N. Springfield Elementary School, **$461,160**; plans by Dixon & Norman, 1103 E. Main St., Richmond, Springfield, Franconia High School. **$1,750,000**. CD 11/11.

▲ **Wash., Seattle**—CIVIC SPORTS CENTER—City, County-City Bldg., Seattle, Zone 4, bond election Nov. 6, civic sports center. **$2,900,000**. CD 8/4.

Wis., Milwaukee—SCHOOL—Bd. School Directors, 1111 N. 10 St., Zone 3, plans by Eschweiler & Eschweiler, 720 E. Mason St., 1 and 2 story, Henry L. Palmer Elementary School. **$800,000**. CD 11/10.

▲ **B. C., Victoria**—COURT HOUSE, etc.—Dpt. P. Wks., Victoria, court house and registry office bldg. $2,000,000. CD 4/18/49.

▲ **North West Territories, Aklavik**—TOWNSITE—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., plans by Rule, Wynn & Rule, 11422 Jasper Ave., Edmonton, Alta., townsite, incl. 30-bed hospital, school, hostels, rehabilitation center, federal bldg., etc., 30 mi. east of present town. **$7,000,000**.

▲ **Ont., Hamilton**—CITY HALL—City, J. F. Berry, clk., City Hall, plans by S. Roscoe, c/o owner, new city hall, Main St. W. next to public library. **$4,700,000**. CD 9/7/51.

COMMERCIAL BUILDINGS

Ala., Birmingham—HOMES—W. Edward Lewis, 1913 Southwood Rd., Vestavia Hills, Ala., plans by C. W. Rogers, 2328 3 Ave. N., 80 brick homes, Roebuck-Hoffman Area, "Cloverdale Section" **$800,000**.

▲ **Conn., East Hartford**—SHOPPING CENTER—Green Manor Estates Inc., 681 Parker St., Manchester, plans by Arnold Lawrence, 19 Bliss St., Manchester, shopping center incl. supermarket and 10 stores, **$1,000,000**. CD 1/30/53.

▲ **Conn., Hartford** — PHYSICS, etc. — Trinity College, Summit St., plans by Robert B. O'Connor, c/o Trinity College, Hartford, physics and mathematics bldg., student center and dining hall, **$2,000,000**.

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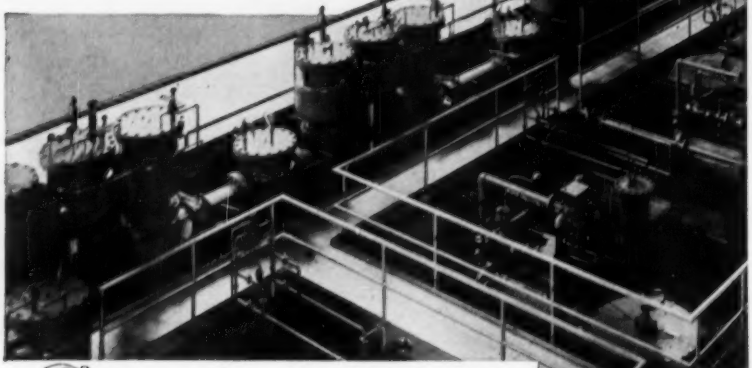

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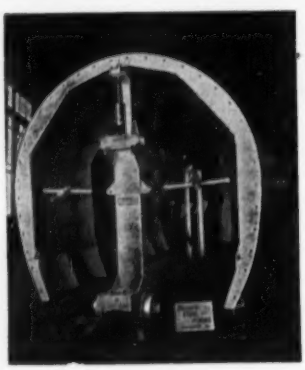

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▲ **Conn., Stamford**—HIGH SCHOOL—Diocese of Bridgeport, Chancery Office, 359 Washington Ave., Bridgeport, plans by J. Gerald Phelan, 24 State St., Bridgeport, catholic high school, Newfield Ave. $1,000,000. Fletcher-Thompson, Inc., 211 State St., Bridgeport, consult engr. CD 6/10.

▲ **Ill., Lake Forest**—AUDITORIUM, etc.—Lake Forest College, Sheridan and Deerpath Rd., plans by Naess & Murphy, 80 E. Jackson St., Chicago, Zone 4, auditorium and fine arts bldg. $1,500,000; Hall of Science, $1,300,000; library addn. $800,000.

▲ **Ind., Evansville**—OFFICE—Indiana Bell Telephone Co., 240 N. Meridian St., Indianapolis, Zone 4, plans by Alden Meranda, 301 Board of Trade Bldg. Indianapolis, 3 story present office addn. $1,000,000.

▲ **Iowa, Cedar Rapids**—SHOPPING CENTER—Sears, Roebuck & Co., 925 S. Homan St., Chicago, Ill., and Younkers 7 and Walnut Sts., Des Moines, Iowa, shopping center, Approx. $1,000,000.

Kan., Wichita—SHOPPING CENTER—Fidelity Realty Co., 139 N. Main St., plans by G. A. Griffin, 416 S. Market St., Kem-Mar Shopping Center 13 and Olive Sts. $500,000.

▲ **Mass., Hyde Park**—SCHOOL—R.C. Diocese of Boston, 1 Lake St., Brighton, Kennedy Memorial School, $1,000,000.

Mass., Medford—DORMITORY—Tufts University, Bouve Boston School, Medford, plans by Arland A. Dirlam, 739 Boylston St., Boston, 3 story dormitory. $700,000.

▲ **Mich., Kalamazoo** — SHOPPING CENTER — The Port-Aire Shopping Plaza, Inc., Troff, Lilly & Bonaw, attys., Kalamazoo, shopping center, incl. 25 stores, parking space, Kilgore Rd. and US-12 bypass, $4,000,000.

▲ **Mich., Saginaw**—HOSPITAL—St. Mary's Hospital Bd. Trustees, Arthur E. Treanor, chn. Bldg. Fund, 830 S. Jefferson St., hospital addn. $3,500,000.

N. J., Elizabeth—SCHOOL, etc.—St. Anthony's Parish, Elizabeth, plans by Anthony J. DePace, 154 W. 46 St., New York 19, N. Y., school and auditorium. $500,000.

▲ **N. J., Longport**—HOTEL, MOTEL—Sylvester J. Lowry, Rittenhouse Plaza, Phila., Pa., plans by Samuel I. Oshiver, 1704 Walnut St., Phila., Pa., 12-unit hotel and motel, restaurant, bar, super-market and drug store, $1,250,000.

▲ **N. Y., Babylon**—DEPARTMENT STORE—Abraham & Straus, Fulton at Hoyt Sts., Brooklyn, Zone 1, plans by John Graham Associates, 15 W. 44 St., New York, N. Y., 3 story, 180,000 sq. ft. department store, $2,000,000.

N. Y., Buffalo—SCHOOL—Catholic Diocese of Buffalo, 35 Niagara Square, boys high school in northwest Buffalo. $600,000.

N. Y., Buffalo—SCHOOL—Catholic Diocese of Buffalo, 35 Niagara Square, boys' high school to serve northeast Buffalo, Cheektowaga and Amherst, $600,000.

▲ **N. Y., Hamilton**—LIBRARY—Colgate University, Hamilton, library, $1,650,000. Constr. in Summer.

N. Y., Long Island City—SCHOOL—R. C. Church of Precious Blood, 32-23 36 St., plans by Robert J. Reiley & Assoc., 45 W. 45 St., New York, Zone 19, 3 story school, between 36 and 37 Sts. near Broadway, $900,000.

▲ **N. Y., New Windsor**—HOUSES—Syndicate, c/o T. D. Sheppard & Assoc., c/o George H. Beckmann, Inc., State Hy. 4, Teaneck, N. J., 500 houses in area adjacent to new proposed shopping center, $5,000,000.

N. C., Hickory—DORMITORIES—Lenoir Rhyne College, Hickory, plans by Clemmer & Horton, Hickory, dormitories. $510,000. CD 3/3.

O., Cleveland—AUDITORIUM—Case Institute of Technology, 10900 Euclid Ave., Zone 6, plans by Small, Smith, Reed & Draz, 1010 Euclid Ave., Zone 15, student auditorium, $500,000.

▲ **O., Garfield Heights**—HOSPITAL—Marymount Hospital, 12300 McCracken Rd., Cleveland, Zone 25, plans by George S. Voinovich, 1922 E. 107 St., Cleveland Zone 6, hospital addn. $4,000,000. Bids June or July. CD 6/22/54

▲ **O., Solon**—SHOPPING CENTER, etc.—Solon Plaza, c/o M. DeBartolo Constr. Co., 2620 Market St., Youngstown, 30-unit shopping center, and parking area. $2,000,000.

▲ **O., Streetsboro**—HOMES—Mid-West Improvement Co., Jack Shubert, partner, 3694 Bendemeer Rd., Cleveland, Zone 18, 100 homes on 105-acre site 1 mi. north of here, $1,350,000.

▲ **O., Twinsburg**—SHOPPING CENTER—Porath Realty Co., 2424 Euclid Ave., Cleveland, Zone 15, plans by Rudolph J. Ordler, 7133 Euclid Ave., Cleveland, Zone 3, Shopping Center, to be called "Summit Shopping Town", incl. two 3 story department stores with moving sidewalks, air-curtain doors, underground conveyor of purchases to central pickup point, and 75-store units, 4,000 car parking area, covered walkways, auditorium, restaurant, 60-acre site $16,000,000.

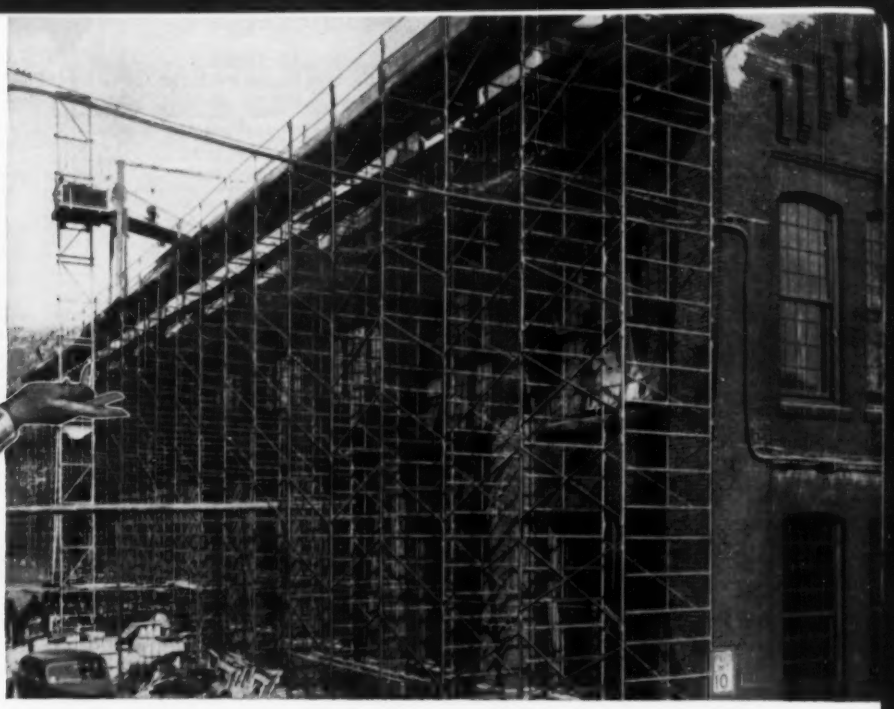
Pa., Ambler—CLUBHOUSE—Royal Oaks Country Club, 2911 C St., Phila., plans by Herman Kline, 34 S. 17 St., clubhouse, dining hall, cocktail lounge, locker rooms, ice skating rink, swimming pools, $700,000.

▲ **Pa., Phila.**—HOSPITAL—Chestnut Hill Hospital, 8835 Germantown Ave., plans by Schmidt Garden & Erikson, 104 S. Michigan Ave., Chicago, Ill., hospital expansion, $1,500,000. CD 12/12.

▲ **Pa., Phila.**—HOSPITAL—Nazareth Hospital, Sisters of the Holy Family of Nazareth, Roosevelt Blvd., plans by Henry D. Dagit & Son, 1329 Race St., hospital expansion, $4,300,000.

Pa., Phila.—DORMITORY—University of Pennsylvania, Law School, 34 St. and Woodland Ave., plans by

(Continued on page 126)



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(Continued from page 124)

Carroll Grisdale & Van Alen, 204 W. Rittenhouse Square, 2 dormitory units, $900,000, Severud-Elstad-Krueger, 415 Lexington Ave., New York, N. Y., engrs. CD 1/18.

▲ **Pa., Upper Darby**—DEPARTMENT STORE—Gimbel Bros., Inc., Eighth and Market Sts., Phila., plans by Lathrop Douglass, 518 Fifth Ave., New York, N. Y., department store, parketeria, 69 and Walnut Sts., $10,000,000. Bids soon. Allabash & Rennis, 16 S. Broad St., Phila., consult. engrs. CD 1/13.

▲ **Pa., Warminster**—RESIDENTIAL DEVELOPMENT—Harold Kuskin, 1420 Walnut St., Phila., residential development, 84 units, County Line Rd. $1,261,000.

S. C., Columbia—DORMITORY—Columbia College, College Pl., plans by Lafaye, Fair Lafaye Assoc., 1226 Sumter St., Columbia, dormitory. $550,000.

Tex., Austin—SHOPPING CENTER—Jaffe & Martin, 4623 Blanco Rd., San Antonio, plans by Irving Klein & Assocs. 1317 Austin St., Houston, 60,000 sq. ft. shopping center in South Austin off S. Lamar Blvd. $675,000.

Tex., Beaumont—OFFICE—Jefferson Building Office, c/o William Tamminga, archt., 3416 Louisiana St., Houston, 6 story masonry office, Pearl and Milam Sts. $500,000. Miles F. Wortham, 4908 Travis St., Houston, consult. engr.

▲ **Tex., Dallas**—HOTEL, etc.—Bachman Development Corp., c/o Fritz Stewart, Merc. Commerce Bldg., plans by Jack Corgan, proj. archt., Melba Bldg., 300-room hotel, $2,000,000; 507,605 sq. ft. masonry department store, $5,000,000, off Northwest Hy. overlooking Love Field.

▲ **Tex., Freeport**—SHOPPING CENTER—Freeport Land Co., Freeport, plans by Irving R. Klein, 1317 Austin St., Houston, doubling capacity of Tarpon Inn Village Shopping Center, $1,250,000. CD 3/17/55.

Tex., Nacogdoches—CHURCH—First Methodist Church, Nacogdoches, church. $750,000.

▲ **Wash., Seattle**—HOUSING UNITS—U. S. Eng., 4735 E. Marginal Way, Zone 4, construct and finance, 128 family housing units for military personnel, $2,000,000.

▲ **Newfoundland, St. John's**—APARTMENTS—U. S. Air Force, Northeast Command, Pepperell Base, Newfoundland, construct and finance, 500 apartment units. $5,000,000.

▲ **Ont., Toronto**—HOTEL—Canadian Pacific Ry. Co., N. M. Kelly, Ontario Dist. Engr., Union Station, Zone 1, 17 Story Royal York Hotel addn. $10,000,000.

▲ **Ont., Toronto**—APARTMENT BLOCKS—Glass-Atkin Holding Corp., 8 Farrington Dr., three of four 100-suite apartment blocks, Jane St. and Wilson Ave., Over $1,000,000; 430-suite apartment, Trethewey Dr. Over $1,000,000; 120-suite apartment in suburban Long Branch, $1,000,000.

▲ **Ont., Toronto**—OFFICE—Hubert Buildings Ltd., 496 Church St., will not construct 10 story 100,000 sq. ft. office bldg. $3,500,000. Project cancelled. CD 10/7.

▲ **Ont., Toronto**—OFFICE—Shell Oil Co. of Canada Ltd., 25 Adelaide St. E., plans by Marani & Morris, 1250 Bay St., 12 story office, $4,500,000. CD 1/20/55.

▲ **Que., Montreal**—APARTMENT BLOCKS—Owner, c/o Ian Martin, archt., 1200 St. Alexander St., apartment blocks, each 12 story, incl. 320 suites, $4,000,000. Work to start in spring. Irving S. Backler, 5253 Decarie Blvd., consult. engr.

▲ **Que., Montreal**—APARTMENT BLOCKS—Owner, c/o Ian Martin, archt., 1200 St. Alexander St., 6 to 10 story apartment blocks, incl. 300 luxury suites. Over $3,000,000.

▲ **Que., Montreal**—APARTMENT—Viscount Realty c/o Kensington Industries, Inc., 1224 St. Catherine St. W., plans by Wood, Blachford & Ship, 4444 Sherbrooke St. W., 16 story, rein.-con. apartment. $2,500,000. Wood, McAdam & Magor, 4444 Sherbrooke St. W., consult. engrs.

INDUSTRIAL BUILDINGS

▲ **Colo., Denver**—PLANT—Ramo-Wooldridge Corp., 8820 Bellanca St., Los Angeles, Calif., electronics mfg. plant. $5,000,000. Pereira & Luckman, 9220 Sunset St., Los Angeles, Calif., consult. engrs. CD 12/6.

▲ **Mich., Bay City**—POWER PLANT—Consumers Power Co., Dan Karn, pres., Jackson, 240,000 kw power plant, generating facility mouth of Saginaw River in Saginaw Bay. $9,800,000. CD 2/26/46.

▲ **Mich., Fremont**—PLANT—Gerber Products Co., Daniel F. Gerber, pres., Fremont, baby-food plant, incl. general office, warehouse addn., cold storage bldg. addn. $2,000,000.

▲ **Mich., Hartford**—POWER PLANT—Indiana-Michigan Electric Co., 2101 Spy Run Ave., Fort Wayne, Ind., 30,000 kilowatt power plant, $4,000,000.

N. J., Flemington—PLANT, etc.—United States Bronze Powder Works, Inc., 220 W. 42 St., New York 36, N. Y., plant and office, 22-acre tract on Route 202, Over $500,000. H. K. Ferguson Co., 19 Rector St., New York 6, N. Y., engr. on preliminary engineering work. CD 2/6.

▲ **N. Y., Ithaca**—MANUFACTURING, etc.—National Cash Register Co., S. Main and K Sts., Dayton, O., plans by Lorenz & Williams, 223 W. First St., Dayton, O., mfg. and office for Ithaca Adding Machinery Div. $2,500,000.

▲ **O., Warren**—PLANT—Chevrolet Motor Div., General Motors Corp., 3044 W. Grand Blvd., Detroit, Mich. 1 and 2 story, 2,500,000 sq. ft. steel, brick and metal siding assembly plant, 300-acre site in Lordstown Twp., southwest of here. $3,000,000. Albert Kahn Associated Architects & Engineers, Inc., 345 New Center Bldg., Detroit, Mich., consult. engr.

▲ **Tex., Nacogdoches**—PLANT—Southern Pine Lumber Co., Nacogdoches, lumber and mill production plant expansion, $3,500,000.

▲ **Tex., Richmond—Rosenberg**—GENERATING PLANT—Houston Lighting & Power Co., 1016 Walker St., Houston, 165,000 kw unit electric power generating plant, 10 mi. east of Richmond-Rosenberg area, 3,700-acre tract. $10,000,000.

▲ **Wash., Ferndale**—REFINERY EXPANSION—General Petroleum Corp., (sub.) Socony-Vacuum Co., Inc., 612 S. Flower St., Los Angeles, Calif., refinery expansion, $5,500,000. Work next year. CD 10/6.

▲ **Wash., Trentwood**—PLANT—Cominco Products Co., c/o Consolidated Mining & Smelting Co. of Canada Ltd., Trail, B. C., fertilizer storage plant. $1,000,000.

▲ **Sask., Estevan**—POWER PLANT—Saskatchewan Power Corp., 1739 Cornwall St., Regina, steam power plant. $40,000,000. Ewbank & Partners (Canada) Ltd., 200 Bloor St. E., Toronto, Ont., consult. engrs. CD 1/18.

UNCLASSIFIED

▲ **Ark., Dumas**—NATURAL GAS DISTRIBUTION SYSTEM—Town, Town Hall, voted $810,000 bonds, natural gas distr. sys. $1,194,000 Towns of Gould and Grady will have to authorize similar issues.

▲ **D. C., Wash.**—TELEVISION STUDIOS, etc.—Naitonal Broadcasting Co., 1625 K St. N. W., plans by Leon Chatelain Jr., 1727 K St. N. W., television studios and transmitter station, Nebraska Ave. near Massachusetts Ave. N. W. $2,000,000. Construction this summer.

▲ **Michigan**—GAS SERVICE—Consumers Power Co., Arthur L. Crawley, mgr., Flint, expansion, constr. natural gas service in Flint Division, incl. gas mains and equip., Genesee Co. $2,000,000.

▲ **Pa., Phila.**—PIERS—Reading Co., Reading Terminal, 10 piers alterations, strengthening and dredging, $1,000,000.

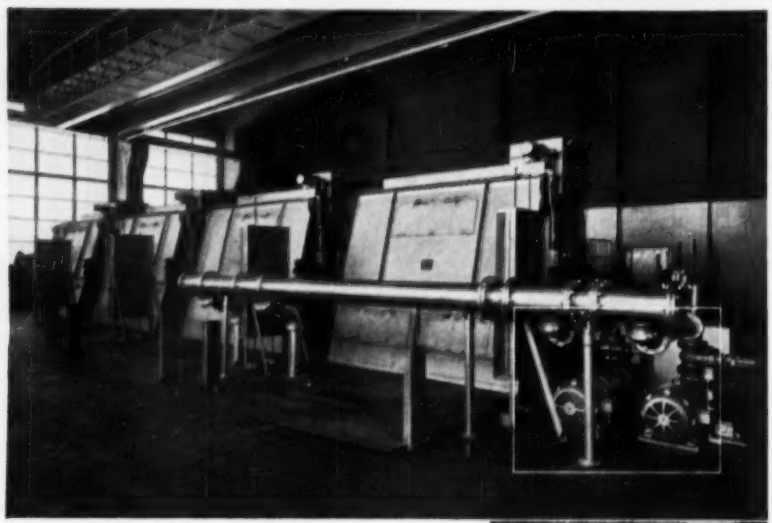
▲ **Tex., Dallas**—GAS LINES, etc.—Lone Star Gas Co., 301 S. Harwood St., install meters and regulators, $175,200; general rehabilitation work on gas lines of existing sys. $200,000; new service lines, throughout city, $500,000; rebuilding, remodeling central customers service center, Logan St. $985,000; new gas distr. mains, $1,200,000.

▲† **Washington**—NIKE HOUSING UNITS—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, 84 family housing units near Redmond, Cougar Mountain, Olalla, Young's Lake and Kingston Nike Sites. $1,000,000. Bids in Spring.

Wash., Tacoma—PARK—Metropolitan Park Dist., City Hall, voted bonds Feb. 14, imprv. Point Defiance Park, incl. addnl. parking areas, seal wall, retaining walls, new pier, etc. $600,000. CD 1/6.

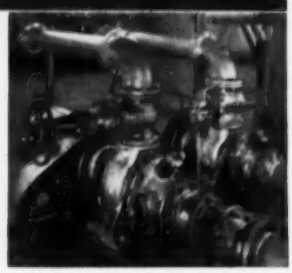
▲ **B. C., Gordon Head**—SOLARIUM—Owner, c/o Chas. E. Craig, 502 Fort St., Victoria, solarium. $1,000,000.

▲ **Ont., Toronto**—TUNNEL—Municipality of Metropolitan Toronto, 67 Adelaide St. E., tunnel for automobile use from Toronto Mainland to Island. Over $1,000,000. CD 1/28/48.



General view of screen room at Hyperion with Type S Screens at left and Disintegrators at right.

Screenings Handling Made Easy at Los Angeles Hyperion...



Closeup of Disintegrators. Units were added to existing screening installation without expensive structural alterations.

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Essentially a low-lift, axial flow pump, the Disintegrator produces a mealy product which is returned to the plant flow without affecting subsequent treatment steps. A portion of Disintegrator discharge is used to flush screenings into the grinder. Wear results at Hyperion have been excellent and periodic inspection and blade replacement have held maintenance costs to a minimum.

If you'd like more information on this modern answer to the screenings handling problem, write for a copy of Bulletin No. 6400. Dorr-Oliver Incorporated, Stamford, Connecticut.

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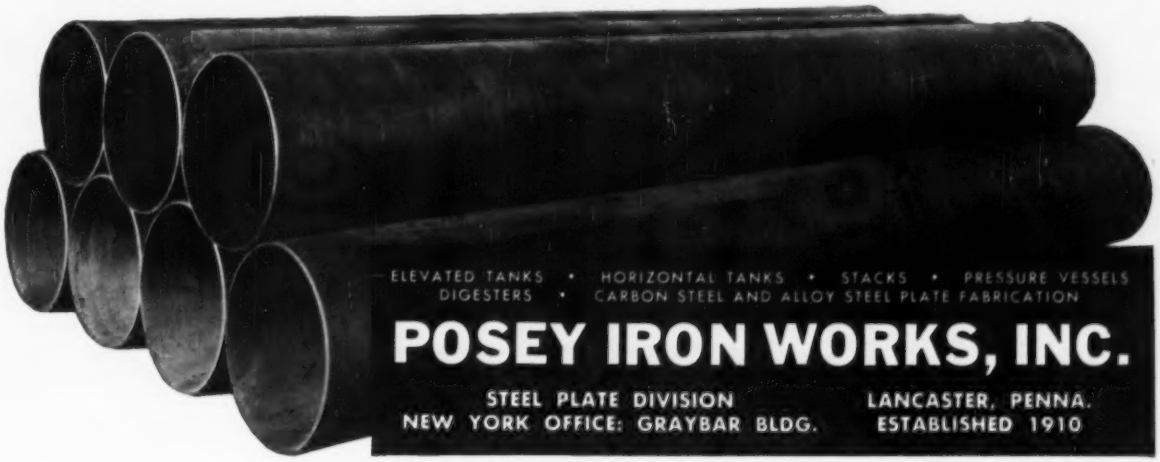

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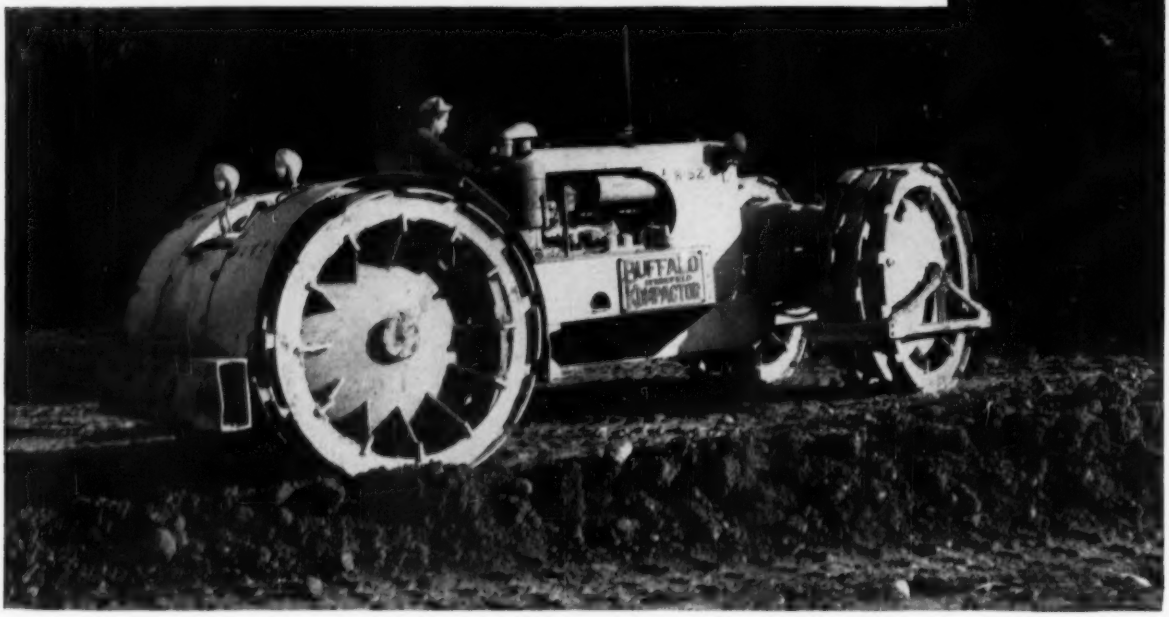

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Bids—Low Bids—Contracts—Second Section

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HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
March 13 Massachusetts

BUILDINGS—LB & CA

† **Five Boro Constr. Co.,** 2 Lafayette St., New York, N. Y. CA **$909,010,** ADMINISTRATION BLDG. No. 28 and BUILDING No. 1 alterations, Veterans Admin. Center, WHITE RIVER JUNCTION VT. Veterans Admin., Munitions Bldg., Wash. D. C. Bids Feb. 7, awarded Feb. 27. CD 2/13.

▲ **Turner Constr. Co.,** 420 Lexington Ave., New York, N. Y. CA Approx. **$7,000,000.** PUBLISHING BLDG., William J. Morrissey Blvd., DORCHESTER, MASS. Boston Globe Publishing Co., 244 Washington St., Boston, Mass. CD 3/22/55.

▲ **Paul Tishman General Contractor, Inc.,** 21 E. 70 St., New York 21, N. Y. CA **$6,813,996.** construct and finance family HOUSING, 505 units, Otis Air Force Base, FALMOUTH, MASS. Purch. & Contg. Office, Otis Air Force Base, Falmouth, Mass. (Correction—contractor's name). CD 2/15, under CA.

▲ **M. S. Kelliher Co.,** 294 Washington St., Boston, Mass. LB **$3,442,000,** est. $3,400,000. HIGH SCHOOL, Walnut St., FRAMINGHAM, MASS. Town, School Bldg. Comm., c/o Supt. Schools, Union Ave., Framingham, Mass. Bids Feb. 20. CD 2/1.

▲ **Chutick & Sudakoff,** 11655 Queens Blvd., Forest Hills, N. Y., Owner Builds, **$1,500,000.** 200-family garden APARTMENT, near Post Rd. and Milbank Ave., GREENWICH, CONN. Arthur Weiser, 20 E. 53 St., New York 22, N. Y., archt.

▲ **A. F. Peaslee, Inc.,** 15 Lewis St., Hartford, Conn., LB **$1,151,766,** Elementary SCHOOL New Britain Ave., HARTFORD, CONN. Bd. Educ., 249 High St., Hartford, Conn. Bids Feb. 28. CD 2/1.

▲ **Case Acre Woods,** c/o Harry Bennett & Assoc., High Ridge Rd., Stamford, Conn. Owner Builds, **$1,850,000.** 70 HOUSES on tract, on Pepperidge Rd., STAMFORD, CONN.

▲ **Hunter Park,** c/o Jack Cooper & Artie Schneider, West Hartford, Conn., Owner Builds, **$1,600,000.** RESIDENTIAL DEVELOPMENT, incl. 132 houses, 45-acre tract, WEST HARTFORD, CONN.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
March 20 Maryland, New Jersey
STREETS AND ROADS
March 13 New Jersey — March 20 Maryland

▲† **New York**—SPECIAL AAA FACILITIES—BA 3/22—U. S. Eng., 111 E. 16 St., New York, Zone 3, special AAA facilities, Spring Valley. $1,000,000-$3,000,000. Raymond & Rado, 101 Park Ave., New York, Zone 17, archts. CD 2/23.

▲† **Pennsylvania and New Jersey**—AAA FACILITIES—BA 3/15—U. S. Eng., 2635 Abbottsford Rd., Phila., Pa., bldgs., facilities, at 4 special AAA sites, Chester, Delaware and Bucks Counties, Pa., Burlington and Camden Counties, N. J. ENG-36-109-56-34, $3,000,-000. Bid date changed. George B. Mebus, Inc., Glenside, Pa., engr. CD 2/27.

BUILDINGS—BA

▲ **Pa., Ardmore**—HIGH SCHOOL—BA 3/27—Lower Merion School Dist., Ardmore, Junior High School, gymnasium, parking area, $2,000,000. Plans deposit $50. Harbeson, Hough, Livingston & Larson, 117 S. 17 St., Phila., archts. Chester I. Duncan, 225 S. 15 St., Phila., engr. CD 11/2.

▲ **D. C., Wash.**—HOUSING—BA 4/12—National Capitol Housing Auth., 1729 New York Ave. N.W., Arthur Capper Dwellings, DC-1-20, incl. 612 dwelling units, 2 and 7 Sts. and Virginia Ave. and M St. S.E. $3,000,000. Plans deposit $50. Hilyard R. Robinson, 1927 11 St. N.W., archt. CD 3/24.

HEAVY CONSTRUCTION—LB & CA

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 N. Office Bldg., Harrisburg,

Lipsett, Inc., 99 Park Ave., New York 16, N. Y., and **Booth & Flinn Co.,** 1942 Forbes St., Pittsburgh, Pa. CA **$7,884,068.** (joint bid) constr. 12,811 ft. divided hy. of rein.-con. variable width, each side of divisor, 2 plate girder, 7 I-beam bridges, Schuylkill Expressway, city line to Vine St., Philadelphia Co. Bids Jan. 27, awarded Feb. 24.

PENNSYLVANIA—State Hy. Dpt., 506 N. Office Bldg., Harrisburg,

PENNSYLVANIA—State Hy. Dpt., 506 N. Office Bldg., Harrisburg,

Pa.—**Middlecreek Constr. Co.,** Middleburg, Pa. LB **$852,627.** wid'n. 14,124 ft. road, with crushed aggregate base, surf. new and existing base with bit. surf. I-beam bridge, Gregg and White Deer Twps., T.R. 15, Union Co.;

Pa.—**Alstate Schuylkill Co.,** Fourth and Chestnut St., Harrisburg, Pa. LB **$378,434.** constr. 24,104 ft. crushed aggregate base with bit. surf. Eldred, Barry and Butler Twps., L.R. 53058 (1), 53057 (2), 53083 (4), Schuylkill Co.;

Pa.—**The Interstate Amiesite Corp.,** Delaware Trust Bldg., Wilmington, Del. LB **$102,868.** wid'n. 21,-120 ft. each side existing pavement, with crushed aggregate base bit. surf. 2 ft. wide, Fairfield and Upper Fairfield Twps., TR 87, Lycoming Co.;

Pa.—**Edward A. Daylor Co., Inc.,** Box 551, Coatesville, Pa. LB **$99,324.** constr. 2,137 ft. rein.-con. West Nottingham Twp., Chester Co. Bids Feb. 24. CD 2/6.

▲ **MARYLAND**—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2,

Rea Constr. Co., Box 2015, Charlotte, N. C. CA **$1,387,192.** surf. 2.42 mi. State Rte. 586, Contr. M 526-320, Montgomery Co. CD 1/18, under LB.

BUILDINGS—LB & CA

Stafford at Freeport Homes, c/o Herman H. York, archt. 90-04 161 St., Jamaica, N. Y. Owner Builds. **$920,000.** 40 HOUSES on tract at South Grove and Carman Sts., FREEPORT, N. Y.

▲ **Thomas C. Brown,** 307 Union St., Schenectady, N. Y. LB **$1,068,000.** (3 bidders) general constr., SCHOOL addn., alterations, ILION, N. Y. Ilion Central School, Ilion, N. Y. Myron A. Jordan, Richfield Springs, N. Y., archt. Bids Feb. 17. CD 8/29/47.

▲ **William E. Bouley Co., Inc.,** 33 William St., Auburn, N. Y. CA **$7,412,000.** (6 bidders) general constr., for MEDICAL-SURGICAL CENTER (Bldg. No. 62) Rochester State Hospital, ROCHESTER, N. Y. Bureau Contracts & Accounts, The Gov. Alfred E. Smith State Office Bldg., Albany, N. Y., Grand total $9,825,093, CD 2/1, under LB;
Joseph Davis, Inc., 120 W. Tupper St., Buffalo, N. Y. CA **$793,433.** (5 bidders) heating work, (Rochester, N. Y.);
Astrove Plumbing & Heating Corp., 36-14 32 St., Long Island City, N. Y. CA **$710,000.** (4 bidders) sanitary work, (Rochester, N. Y.);
Horacek-Hayden, Inc., 16 Howell St., Rochester, N. Y. CA **$909,660** (6 bidders) electrical work, (Rochester, N. Y.).

▲ **A. Friederick & Son Co., Inc.,** 710-712 Lake Ave., Rome, N. Y., CA **$1,129,973,** Laurel Street SCHOOL addn., ROME, N. Y. Bd. Educ., Rome, N. Y. Bids Feb. 1. CD 2/6, under LB.

▲ **Turner Constr. Co.,** 420 Lexington Ave., New York, N. Y., CA, Est. **$1,000,000.** 2 story, 130,000 sq. ft. PLANT OFFICE, CAMDEN, N. J. Campbell Soup Co., 100 Market St., Camden 1, N. J. Alexander D. Crosett & Assocs., 27 William St., New York, N. Y., archts. CD 12/14.

▲ **Oak Forest Homes,** c/o Thomas I. Bustard, 79 Sherwood Rd., Tenafly, N. J. Owner Builds. **$2,000,000.** 120 HOUSES tract on West Ave. and Clinton Ave., NORTHVALE, N. J.

▲ **Heather Hills Homes,** c/o Herbert Wettstein, 40 Ringwood Court, Pompton Lakes, N. J. Owner Builds. **$3,750,000,** 250 HOUSES on tract on Kamm Ave., near Route 18, SOUTH RIVER, N. J.

Hope Constr. Co., 820 Cottman St., Phila., Pa. Separate Contracts. **$900,000.** RESIDENTIAL DEVELOPMENT, Waverly Rd., CHELTENHAM, PA. Leonard Caplin, 820 Cottman St., Phila., Pa., archt.

▲ **Hillside Development & Constr. Co.,** 8100 Bustleton Ave., Phila., Pa. Separate Contracts. **$1,270,000.** RESIDENTIAL DEVELOPMENT, 80 units, CHURCHVILLE, PA.

▲ **Arters Bros., Inc.,** Media, Pa. Separate Contracts. **$3,000,000.** 200 RESIDENTIAL DEVELOPMENT, Middletown Twp., LIMA, PA.

▲ **John McShain, Inc.,** 17 and Spring Garden Sts., Phila., Pa. CA Est. **$3,000,000.** APARTMENTS, PHILA, PA. Presidential Apartments, City Line Ave., Phila., Pa. Edward G. Holland, 504 N. 17 St., Phila., Pa., archt.

Lauter Constr. Co., 112 S. 16 St., Phila., Pa. CA **$929,-150.** 1 story, brick, block, steel, 11,000 sq. ft. plastics PLANT and WAREHOUSE, WARREN, PA. Sylvania Electric Products, Inc., 440 Market St., Williamsport, Pa. CD 2/16, under LB.

▲ **Craigmont Constr. Co.,** 10 E. Fayette St., Baltimore 2, Md. Owner Builds. **$1,713,700.** 209 brick, masonry DWELLINGS, Graigmont, Bardwell, Marksworth, Moorehead and Sherill Rds., BALTIMORE, MD.

▲ **A. A. Ruggerio & Son, Inc.,** 121 Atkins Ave., Wilmington, Del. Separate Contracts, **$1,320,000.** 48-unit RESIDENTIAL DEVELOPMENT, Oak Wood Hills, WILMINGTON, DEL.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
March 13 South Carolina — March 14 Virginia

BUILDINGS—BA

▲ **Va., Norfolk**—HOUSING—BA 3/15—Norfolk Redevelopment & Housing Auth., National Bank of Commerce Bldg., 314-unit low rent housing development, 2 story masonry constr., 32 residential bldgs., community bldg., recreational bldg., utilities bldg. $3,000,000. Plans deposit $25. Alfred M. Lublin, archt., and T. David Fitz-Gibbon, consult. archt., 220 W. Freemason St., Norfolk. Harrison, Ballard & Allen, Inc., 243 E. 49 St., New York, N. Y., assoc. archt. CD 9/19/52.

HEAVY CONSTRUCTION—LB & CA

▲ **City,** T. E. Temple, city mgr., Municipal Bldg., Danville, Va., Own Forces. **$1,750,000.** paving 116 existing streets, constr. reconstr. addnl. streets, curbs, gutters, DANVILLE, VA. CD 3/15/55.

▲† **Dravo Corp.,** Neville Island, Pittsburgh, Pa., LB **$18,461,984,** Markland Locks and Dam, Ohio River near Ghent, Tumble Co., Ky. and near Markland, Switzerland Co., Ind., KENTUCKY and INDIANA. U. S. Eng., P.O. Box 59, Louisville 1, Ky. Bids Feb. 29. CD 2/1.

▲† **Al Johnson Constr. Co.,** 608 Foshay Tower, Minneapolis 2, Minn., CA **$3,384,666,** completion of Cheatham Power Plant, Cheatham Lock and Dam, TENNESSEE. U. S. Eng., 306 Federal Office Bldg., Nashville, Tenn. Bids Feb. 7. CD 2/9, under LB.

BUILDINGS—LB & CA

▲ **Fowler-Jones Constr. Co.,** Reynolds Bldg., Winston-Salem, N. C., CA **$1,174,800.** 31 DWELLINGS, Proj. Happy Hills Gardens, NC 12-1, WINSTON-SALEM, N.C. Winston-Salem Housing Auth., Reynolds Bldg., Winston-Salem, N. C. Bids Jan. 26. CD 2/1, under LB.

▲ **The Flour Corp., Ltd.,** 2500 S. Atlantic Blvd., Los Angeles, Calif. CA **$18,000,000.** PLASTICS PLANT, BATON ROUGE, LA. W. R. Grace & Co., 7 Hanover Square, New York, N. Y.

▲ **Chris Larsen Co.,** Maritime Bldg., New Orleans, La. LB **$4,085,485,** STATE OFFICE BLDG., NEW ORLEANS, LA. State Bldg. Auth., Baton Rouge, La. Bids Feb. 28. CD 1/30.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
March 13 Wisconsin
STREETS AND ROADS
March 13 Michigan, Wisconsin — March 20 Ohio

BUILDINGS—BA

▲ **Ill., Calumet City and Lansing**—SCHOOLS—BA 3/29—School District 215, Pulaski and Superior Sts., (A) high school addn., 186 and Vernona Sts., Calumet City, (B) new high school, 186 and Schultz Sts., Lansing. $2,536,000. Consoer & Morgan, 351 E. Ohio St., Chicago, Zone 11, archts.

HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—State Hy. Dpt., Columbus, Zone 15,

O.—**The Horvitz Co.,** 4375 E. 146 St., Cleveland, O. LB **$1,262,371,** est. $1,486,200, Type T-71 and structures 1.964 mi. SR 17-8.85, U-683 (15) Village of Brookpark, City of Cleveland, Cuyahoga Co.;

O.—**Claude Britton,** 405 W. Atwood St., Galion, O., LB **$79,300,** est. $94,800, Type T-35 on B-119 and structures, 0.17 mi. SR 162-6.54, Huron Co. Bids Feb. 21. CD 1/25.

▲† **W. L. Johnson Constr. Co.,** Shook Rd., Groveport, O. LB **$1,035,228,** est. $1,105,335, Continental Air Command facilities, incl. fire and pump stations, underground gasoline storage tanks parking apron, 3 taxiways, Clinton County Air Force Base, ENG-46-022-56-7, WILMINGTON, O. U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va. Bids Feb. 23. CD 1/26.

▲ **M. J. Boyle & Co.,** 2480 N. Elston Ave., Chicago, Ill., CA **$1,193,998,** West Side Subway Congress St. Station and La Salle St. Station, Changes, CHICAGO, ILL. City, City Hall, Chicago, Ill. Bids Jan. 26. CD 2/8, under LB.

BUILDINGS—LB & CA

▲ **G. R. Mathers,** 4868 Dublin St., Columbus, O. CA **$2,575,000,** 103 HOMES, Windsor Place Addn., COLUMBUS, O. Northwest Real Estate Co., 1393 Granview Ave., Columbus, O.

▲ **Hay Ward Constr. Co.,** 33000 Vine St., Eastlake, O. Own Forces. **$1,000,000.** 75 HOMES, Beach Park Ave., EASTLAKE, O.

▲ **Edward J. DeBartolo,** 2640 Market St., Youngstown, O. CA **$1,000,000.** SHOPPING CENTER to be known as Meridian Plaza Center, S. Meridian Rd., YOUNGSTOWN, O. Meridian Plaza, Inc., c/o contractor. CD 11/23.

▲ **A. A. Caron,** 7327 North Ave., River Forest, Ill., Own Forces, **$2,000,000.** 100 HOMES, ADDISON, ILL. Ray Basso, 1545 N. Clinton St., River Forest, Ill., archt.

▲ **Merlo Builders, Inc.,** 14400 S. Hoxie St., Burnham, Ill., Own Forces **$1,800,000.** 100 HOMES, BURNHAM, ILL.

▲ **North Park Homes, Inc.,** 3900 N. Belt-W, Belleville, Ill., Owner Builds, **$1,500,000,** 250 addnl. HOMES, Parkfield Terrace off Route 157, near CAHOKIA (East St. Louis P. O.) ILL.

▲ **Ragnar Benson, Inc.**, 4744 W. Rice St., Chicago, Ill., CA **$3,000,000**, 10 story, bsmnt., HOSPITAL addn., CHICAGO, ILL. Passavant Hospital, Superior and Fairbanks Sts., Chicago, Ill. Awarded Feb. 23. CD 11/28/52.

▲ **Dale Constr. Co.**, 1930 Edison Ave., Granite City, Ill., Owner Builds. **$1,500,000**, 250 addnl. RESIDENCES, Glenview Subdivision, Jill Ave. east of Nameoki Rd., GRANITE CITY, ILL.

▲ **Miller Builders**, 2707 Peterson Rd., Chicago, Ill., Own Forces, **$1,000,000**. 50 HOMES, WILMETTE, ILL. Anton Kampf 2409 Lunt St., Chicago, Ill., archt.

▲ **Rose-Hill Builders**, 13324 W. Seven Mile Rd., Detroit 35, Mich. CA Est. **$12,000,000**. Balmoral Estates, 830 brick HOMES, Joy, Merriman, Farmington, and Ann Arbor Trail, NANKIN, MICH. Rose-Hill Realty, 17300 Grand River, Detroit 27, Mich.

Fullerton Constr. Co., 19156 Filer St., Detroit 34, Mich. CA **$969,400**. general constr., Romulus HIGH SCHOOL, ROMULUS, MICH. Romulus Twp. School Dist., Carl W. Morris, secy., 11401 Olive St., Romulus, Mich. Bids Feb. 16. CD 1/27.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES

March 20 Texas-Oklahoma

STREETS AND ROADS

March 15 Kansas
March 16 Minnesota
March 20 Iowa, Texas
March 21 Texas

▲ **Montana**—BA 3/15—At office Ebasco Services, Inc., engrs., Trout Creek, Mont., Noxon Rapids dam and powerhouse on Clark Fork River, 1,054 ft. long and 190 ft. high, rein.-con., earthfill, for Washington Water Power Co., W825 Trent St., Spokane, Wash. $85,000,000.

▲† **N. M., Alamogordo**—MISSILE ASSEMBLY BLDG.—BA 3/20—U. S. Eng., Box 1538, Albuquerque, missile assembly bldg., Holloman Air Force Base, ENG-29-005-56-67, $1,000,000. CD 2/23.

▲† **Texas**—BA 3/23—International Boundary & Water Comm., U. S. and Mexico, L. H. Hewitt, U.S. Comr. and David Herrera Jordan, Mexican Comr., Box 1859, El Paso, Tex., Anzaldúas Dam, Lower Rio Grande Flood Control Proj., 8 mi. south of McAllen, Tex. Total est. $5,000,000. Bid date changed. CD 2/23.

▲ **Tex., Arlington**—BA 3/24—City, Tommy Vandergriff, mayor, City Hall, constr. Village Creek Dam and Reservoir, 45,000 sq. ft. capacity dam, 67 ft. high at highest point, 400 ft. wide at base; 24 ft. wide at top, near here. $4,250,000. Plans deposit $50. Freese & Nichols, 407 Danciger Bldg., Fort Worth, engrs. CD 9/17/54.

▲† **Kansas**—BA 4/4—U. S. Eng., Box 61, Tulsa, Okla., spillway and embankment Verdigris River, for Toronto Dam, Woodson Co., Inv. 34-066-56-46. CD 1/7/53.

BUILDINGS—BA

Tex., Seminole—HIGH SCHOOL, etc.—BA 4/3—Seminole Common Consolidated School Dist., Seminole, units of high school and auditorium, gymnasium and bus shop, group classrooms. $900,000. Plans deposit $25. Fred Buford & Assocs., 326 Interurban Bldg., Dallas, archts. CD 8/12.

HEAVY CONSTRUCTION—LB & CA

MINNESOTA—State Hy. Dpt., 1246 University Ave., St. Paul.

Kraus-Anderson of St. Paul Co., 190 Ramsey St., St. Paul, Minn. CA **$751,448**. grav. base, bridges 1.1 mi. near and in Shakopee, Scott Co. CD 1/31, under LB.

▲ **MISSOURI**—State Hy. Comn., Jefferson City,

Mo.—**Koss Constr. Co.**, 205 Farm Bureau Bldg., Des Moines, Iowa, LB **$2,395,165** (7 bidders) c. conc. 8.251 mi. Newton Co.; LB **$113,898** (7 bidders) c. conc. 0.332 mi. Newton Co.;

Mo.—**Arthur E. Quinn Contr.**, Salisbury, Mo., LB **$105,978** (7 bidders) grav. or crushed stone surf. 14.95 mi. Washington Co.;

Mo.—**Midco Constr., Inc.**, Union, Mo., LB **$86,933** (5 bidders) grav. or crushed stone surf. 7.876 mi. Jefferson Co. Bids Feb. 24. CD 2/14.

▲ **Chicago Bridge & Iron Co. and Fluidyne Corp.**, 2492 McCormick Bldg., Chicago 4, Ill., CA **$3,000,000**, constr. highspeed wind tunnel, DALLAS, TEX. Chance Vought Aircraft, Inc., 9314 W. Jefferson St., Dallas, Tex. Bids Jan. 3. CD 12/15.

▲ **NEW MEXICO**—State Hy. Dpt., Capitol Bldg., Santa Fe,

N. M.—**Wylie Brothers Contg. Co.**, 6511 Domingo Rd. N.E., Albuquerque, N. M. LB **$710,449**. Clines-Corners-East, Proj. IN 003-4 (2), Torrance Co.;

N. M.—**Skousen Constr. Co.**, Springer Bldg., Albuquerque, N. M. LB **$541,040**. Glenwood-Luna Jct., Proj. S 1165 (3), Catron Co.;

N. M.—**Daniels Constr. Co.**, P.O. Box 6235, Station B, Albuquerque, N. M. LB **$99,901**. Spur Conns. US-550 to Kirtland and Fruitland, Proj. S 1340 (1), San Juan Co.;

N. M.—**Jack Adams**, 105 Balboa St., Santa Fe, N. M. LB **$239,809**. Moses-North, Proj. S 1446 (3), Union Co. Bids Feb. 24. CD 2/15.

BUILDINGS—LB & CA

† **Dondlinger & Sons**, 1206 E. Lincoln St., Wichita, Kan. CA **$965,000**. army family HOUSING, FORT CROWDER, MO. U. S. Eng., Federal Office Bldg., Kansas City, Mo. CD 12/30, under LB.

▲ **Elbel Constr. Co.**, 921 Baltimore Ave., Kansas City, Mo. CA Est. **$6,000,000**. Antioch Gardens SHOPPING CENTER, at Antioch Rd. Hy. 69 (Clay Co.), NORTH KANSAS CITY, MO. Charles F. Curry & Co., 921 Baltimore Ave., Kansas City, Mo. Kivett & Meyers, 10 and Baltimore Aves., Kansas City, Mo., archts.

▲ **Murch-Jarvis Constr. Co.**, 718 Locust St., St. Louis 1, Mo. CA Est. **$1,500,000**. 1 story, 300x500 ft. steel, rein.-con., WAREHOUSE, 140 E. Prairie Ave., ST. LOUIS, MO. Chicago, Burlington & Quincy R. R. Co., E. J. Brown, ch. engr., 547 W. Jackson Blvd., Chicago, Ill. Leslie J. Bergmeier, 6630 Clayton Rd., Richmond Heights 19, Mo., engr

▲ **Dresser Eng. Co.**, Masonic Temple Bldg., Tulsa, Okla., CA **$2,275,000**. tripling capacity gas-treating PLANT, processing capacity increased from 25 million cu. ft. gas daily to 80 million cu. ft., FORT STOCKTON, TEX. Permian Basin Pipeline Co., Fort Stockton, Tex. CD 2/17.

▲ **Ideal Cement Co.**, Gulf Div., San Jacinto Bldg., Houston, Tex., cancelled bids to have been opened Feb. 15, addnl. unit of CEMENT MFG. PLANT, Proj. No. 396. HOUSTON, TEX. Est. **$1,000,000-$4,000,000**. Will re-advertise. CD 1/11

Rognstad-Olsen Constr. Co., Box 266, Casper, Wyo., CA, **$998,000**. 6 story, bsmnt., 60,600 sq. ft. PETROLEUM BLDG., CASPER, WYO. Fred Goodstein, 1225 S. Center St., Casper, Wyo. Bids Jan. 20, awarded Feb. 23. CD 2/1, under LB.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES

March 21 California

STREETS AND ROADS

March 21, 22 California

▲ **Ore., Portland**—BA 3/27—Multnomah Co., Court House east-side approaches to Morrison and Hawthorne Bridges. $4,500,000. Paul C. Northrup, c/o owner, engr. CD 8/18/54.

▲† **Washington**—BA 3/29—U. S. Eng., City-County Airport, Walla Walla, Wash., three 143,000 hp. hydraulic turbines for Ice Harbor Dam, Walla Walla Co., CIVENG-45-064-56-50. $5,000,000. CD 8/17.

HEAVY CONSTRUCTION—LB & CA

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento,

M. J. B. Constr. Co. & Lord & Bishop, Inc., 322 Elks Bldg., Stockton, Calif. CA, **$1,975,959**. constr. 4.8 mi., Sacramento-Lodi Freeway, incl. 5 bridges and pumping plant, U. S. 99, San Joaquin Co. Bids Feb. 15, awarded Feb. 23. CD 2/23, under LB.

▲† **Campbell Constr. & Equip. Co.**, 1150 Folsom St., San Francisco, Calif., LB, **$1,066,325** (8 bidders) Nike station and facilities, Travis Air Force Base, CALIFORNIA. U. S. Eng., 1209 Eighth St., Sacramento, Calif. Bids Feb. 28. CD 2/3.

† **Campbell Constr. & Equip. Co.**, 1150 Folsom St., San Francisco, Calif., CA, **$801,245**, NIKE station with all facilities ENG-56-1, San Francisco and San Mateo Counties, CALIFORNIA. U. S. Eng., 180 New Montgomery St., San Francisco, Calif. Bids Nov. 1, awarded Feb. 23. CD 12/1, under LB.

BUILDINGS—LB & CA

▲ **Electric Constr. Co.**, 1650 Center St., Tacoma, Wash., LB **$796,888** (6 bidders) wiring for 10-story steel frame COUNTY-CITY BLDG., TACOMA, WASH. Pierce Co., Court House, Tacoma, Wash. Bids Feb. 21.; **Decatur Iron & Steel**, Decatur, Ala., LB **$379,843** (3 bidders) jail equipment (Tacoma, Wash.).

▲ **R. A. Watt**, 7862 S. Western Ave., Los Angeles, Calif., CA **$1,332,760**, 130 frame, stucco DWELLINGS, Tract 2447, GARDEN GROVE, CALIF. Trask Land Co., 7862 S. Western Ave., Los Angeles, Calif.

▲ **K & R Building Co.**, 470 S. Beverly Dr., Beverly Hills, Calif., CA **$1,912,066**, 165 frame, stucco DWELLINGS, Tract 16676; CA **$1,451,008** 125 frame, stucco dwellings, Tract 20419, GARDENA, CALIF. Harley Building Co., 246 S. Robertson Blvd., Beverly Hills, Calif. Wm. A. Bray, 962 N. La Cienega Blvd., Los Angeles, Calif., archt.

▲ **Home Savings & Loan Assn.**, 800 S. Spring St., Los Angeles, Calif., Owner Builds. **$1,034,000**. 110 frame, stucco DWELLINGS, Budlong, Destord, and Meyer Sts., LENNOX, CALIF.

▲ **The J. H. Pomeroy Co., Inc.**, 333 Montgomery St. San Francisco, Calif., CA, Est. $40,000,000; Over **$50,000,000** with equip. 1,200,000 sq. ft. AUTO ASSEMBLY PLANT, vicinity of Rosemead, LOS ANGELES, CALIF. Ford Motor Co., 3000 Schaefer St., Dearborn, Mich. CD 8/22.

▲ **Henry Doelger**, 375 S. Mayfair St., Daly City, Calif. Owner Builds, **$1,000,000**. SHOPPING CENTER, incl. 35 stores, post office, medical-dental bldg., Linda Mar Tract, PEDRO VALLEY, CALIF.

▲ **Carrico Constr. Co., Inc.**, 375 Ocean Ave., San Francisco, Calif., CA, **$1,500,000**, rein.-con. MONASTERY and CHAPEL, SAN FRANCISCO, CALIF. Carmelite Monastery of Cristo Rey, c/o Ryan & Lee, archts., 305 Grant Ave., San Francisco, Calif.

Stolte, Inc., 5467 San Fernando Rd., Los Angeles, Calif., LB **$970,000**, (11 bidders) NURSES HOME and SCHOOL, SANTA ANA, CALIF. Orange Co., Court House, Santa Ana, Calif. Bids Feb. 21. CD 1/25.

Jack H. MacDonald Co., 8943 Wilshire Blvd., Los Angeles, Calif., CA **$770,475**, 2 story, 160x340 ft. concrete OFFICE, SANTA MONICA, CALIF. John M. Stahl, 8943 Wilshire Blvd., Los Angeles, Calif.

CANADA

HEAVY CONSTRUCTION—LB & CA

STATE HIGHWAY LETTINGS
STREETS AND ROADS

April 9 British Columbia

▲ **Ont., Kingston**—BA 3/23—City, City Hall, sewage treatment plant. $1,000,000. Plans deposit $100. Gore & Storrie Ltd., 1130 Bay St., Toronto, engrs. CD 2/21/50.

BUILDINGS—BA

▲ **B. C., Vancouver**—LIBRARY—BA 3/29—Vancouver Library Bd., Main and Hastings Sts., 5 story, 120x204 ft. rein.-con. library, Burrard and Robson St. $2,000,000. Plans deposit $100. Semmens & Simpson, 21272 W. Pender St., archts. CD 11/17/54.

BUILDINGS—SLC

▲ **Que., Montreal**—OFFICE, etc.—Sternthal Realty Co., 1435 St. Alexander St., soon lets contract, 10 story, office and fashion center. $1,000,000. Mayerovitch & Bernstein, 1500 St. Catherine St. W., archts. Irving S. Backler, 5253 Decarie Blvd., engr.

HEAVY CONSTRUCTION—LB & CA

▲ **B. Perini & Sons, Canada Ltd., 49 Jackes Ave.**, Toronto, Ont., CA, **$2,045,257**, two 160 ft. span structural steel Hangars No. 13 and 14, outside services, R.C.A.F. Station, Uplands, OTTAWA, ONT. Defence Constr. Ltd., 56 Lyon St., Ottawa, Ont. Bids Feb. 2. CD 1/10.

BUILDINGS—LB & CA

Cerro Constr. Ltd., 2042 Griffiths St., Buranby, B. C., CA **$750,000**, PLANT EXPANSION, PORT ALICE, B. C. Alaska Pine & Cellulose Ltd., Port Alice, B. C. Awarded Feb. 23. CD 12/15.

▲ **Beaver Constr. Co., Ltd.**, 175 W. 5 Ave., Vancouver, B. C., LB **$1,809,747**, 4 story, rein.-con. HOME FOR THE AGED, PORT COQUITLAM, B. C. B. C. Govt., Parliament Bldgs., Victoria, B. C. Bids Feb. 15.

▲ **Inter-Provincial Constr. Co., Ltd.**, 736 Granville St., Vancouver, B. C., CA, **$1,000,000**, SHOPPING CENTER and HOTEL DEVELOPMENT, POWELL RIVER, B. C. Samuel H. Rosen, 5725 Angus Dr., Vancouver, B. C. J. H. Harvey, 1155 W. Pender St., Vancouver, B. C., archt. Awarded Feb. 23.

▲ **Ball Brothers Ltd.**, 49 King St. E., Kitchener, Ont., CA, **$1,323,965**, 7 Army Camp bldgs. and outside services, incl. ADMINISTRATION, OFFICERS MESS, QUARTERS, RANKS, CLUBS, GUARD HOUSE, etc. PETAWAWA, ONT. Defence Constr. Ltd., 56 Lyon St., Ottawa, Ont. CD 12/15/54.

▲ **Dominion Bridge Co., Ltd.**, 1139 Shaw St., Toronto, Ont., CA Total est. **$10,000,000**, structural steel only for Royal York HOTEL addn., TORONTO, ONT. Canadian Pacific Ry. Co., N. M. Kelly, Ontario Dist. Eng., Union Station, Toronto 1, Ont. Ross, Patterson, Townsend & Fish, 4115 Sherbrooke St. W., Montreal, Que., and Charles B. Dolphin, 880 Bay St., Toronto, Ont., assoc. archts. Awarded Feb. 23. CD 2/24.

▲ **Range Investment, Ltd.**, 1430 Peel St., Montreal, Que. Owner Builds. **$3,200,000**, HOUSING, incl. 64 bungalows, 42 row houses, 27 apartment bldgs., MONTREAL, QUE.

▲ **E. G. M. Cape & Co.**, 4898 Western Ave., Montreal, Que., CA, **$1,700,000** (9 bidders) 1 story, 180,000 sq. ft., steel frame PLANT addn., MONTREAL, QUE. Northern Electric Co., Ltd., 1600 Notre Dame St. W., Montreal, Que. Bids Feb. 14, awarded Feb. 21. CD 1/25.

ALASKA

BUILDINGS—BA

▲† **Alaska, Juneau**—HIGH SCHOOL—BA 4/18—Alaska P. Wks., Dpt. Interior, Box 1181, Juneau, 1 and 2 story, 60,000 sq. ft. rein.-con. high school, Proj. 50-A-176. $2,000,000. Plans deposit $25. CD 9/17/54.

LATIN AMERICA

BUILDINGS—LB & CA

▲ **Constructora Popular**, c/o owner, CA **$2,000,000**. 19 story BANK and PRIVATE OFFICES BLDG. MONTERREY, MEXICO. Banco P. de E y A., Hidalgo, Monterrey, N. L. Mexico, Ramon Lamadrid, Mario Pani, c/o owner, archts. Awarded Feb. 23.

FOREIGN

HEAVY CONSTRUCTION—BA

Iraq—BA 4/2—Development Bd. & Ministry of Development of Govt. of Iraq, Baghdad, six boiler units and appurtenances for Dibis and Baghdad Power Stations, Contr. 2. Traction & Electricite, Electrobel, 1, Place du Trone, Brussels, consult. engrs. CD 2/20.

Iraq—BA 5/21—Ministry of Development, Govt. of Iraq, Baghdad, constr. highway bridge, approx. 338 metres long and 12 metres wide over River Euphrates at Qurnah, Basra Liwa, Contr. No. B/11 (1956). Plans deposit I.D. 5,000.

(Proposal Advertisements see p. 147 to 149)

Watch WOOLDRIDGE in 56

THE COMPLETE SCRAPER LINE

the COMPLETE scraper line

▸ PACE-SETTERS in design

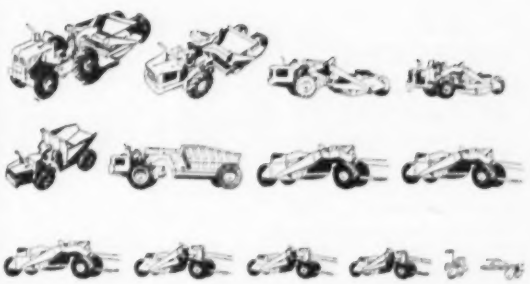
▸ produced by SPECIALISTS—in widest CAPACITY RANGE

Let your Wooldridge Distributor demonstrate

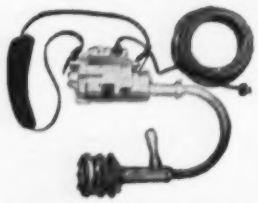
THE COMPLETE SCRAPER LINE

WOOLDRIDGE

WOOLDRIDGE MANUFACTURING DIVISION
CONTINENTAL COPPER & STEEL INDUSTRIES, INC.
Sunnyvale, California, U.S.A.



"BERG"
CONCRETE SURFACER
MODEL A



"Berg" equipment is used extensively for surfacing and finishing applications on concrete construction.

The many "BERG" Models available, permit exact selection for your particular application.

The distinctive "BERG" features give you the kind of results that are realized in better quality work, combined with lower costs.

"BERG" Heads and Attachments are interchangeable, thereby providing adaptability for vibrating, wire brushing, sanding and polishing applications.

THE CONCRETE SURFACING MACHINERY CO.
4667 SPRING GROVE AVE.
CINCINNATI 32, OHIO

DRILLING CONTRACTORS
Diamond and Shot Core Borings
Dry Sample Borings
Grout Holes and Pressure Grouting
Foundation Testing for Bridges, Dams and other Heavy Structures
Manufacturers, also of Diamond Core Drilling Machines and complete accessory equipment, including all types of Diamond Drilling Bits. Ask for Bulletin 320.
SPRAGUE & HENWOOD, Inc.
Dept. E, Scranton 2, Penna.

McKIERNAN-TERRY
WIDE-RANGE LINE OF
PILE HAMMERS AND EXTRACTORS

Now made in complete standardized line of 11 double-acting hammers, 5 single-acting hammers and 2 double-acting extractors. Also Sand Drain Equipment and Steam Generators.
Write for free descriptive Bulletins.
Also builders of coal and ore bridges and unloaders, and specially designed machinery.
McKIERNAN-TERRY CORP.
32 Mercer Street, Dover, N. J.

Unit Prices

Site Clearing Adds to Hangar Cost

For $754,777 England Air Force Base in Alexandria, Louisiana, will get a new organizational maintenance hangar. Of this, $510,000 is the lump sum bid for the 156x271-ft steel building, an average of $12.06 per sq ft of floor space.

The contract price includes the cost of clearing buildings, roads, a bridge, and various utilities from the site and installing sanitary sewers, storm drains, a box culvert, and electrical work. The hangar has corrugated metal siding, spread footing foundations, and built-up roofing supported on steel decks. Masonry inclosures provide space for shops.

The hangar floor paving is 11 in. thick in a 90-ft middle strip and 15 in. thick in two 75-ft side strips.

The 4,300-sq ft concrete apron is 15 in. at the center with edges strengthened to 19 in.

The Corps of Engineers, Little Rock, Arkansas, awarded this work to Southern Builders, Inc., Shreveport, La. The price is 5.4% under the second low bid but 2.15% over the engineer's estimate. Kuljian Corporation of Philadelphia, Pennsylvania, is consulting engineer for the Corps of Engineers.

All materials are furnished by the contractor.

Minimum wage rates are $3.00 for skilled labor, $2.025 for semi-skilled, and $1.15 for common labor.

The bidders include:

1C Southern Builders Inc., P. O. Box 1815, Shreveport, Louisiana $754,777
2 Barnet Brezner, 2833 Lee Street, Alexandria, Louisiana $797,616
4 Gravier & Harper, P. O. Box 1381, Alexandria, Louisiana $804,703
EE Kuljian Corp., 1200 N. Broad Street, Philadelphia, Pennsylvania $738,854

Bids: 1-19-56 Items	Unit	Quantity	Unit Prices 1C	2
Maintenance hangar	ls	job	$510,000	$541,000
Bldg, T-506, relocate	ls	job	636.00	800.00
T-506	ls	job	5,100	4,300
T-507	ls	job	636.00	800.00
T-514	ls	job	636.00	800.00
T-816	ls	job	2,875	2,600
T-403, remov	ls	job	1,225	950.00
T-409	ls	job	500.00	450.00
6 misc bldgs, remov	ls	job	700.00	1,000
Bridge, roads, culv & conc slabs, remov	ls	job	2,500	5,500
Utilities, water, gas & sewer, remov	ls	job	891.00	1,000
Site gr & subgr, prepare	ls	job	16,995	15,000
Water line & valves, 8"	lf	625	5.50	5.00
3"	lf	140	3.45	3.50
Fire hydrant, relocate	ea	1	104.73	100.00
f & i	ea	2	291.50	275.00
Gas line & valve, 3"	lf	320	2.40	2.25
Sanitary sewer, 8"	lf	565	1.70	1.60
6"	lf	35	1.38	1.35
Storm drain, 6"	lf	220	1.22	1.50
10"	lf	195	1.59	1.75
12"	lf	240	2.12	2.25
15"	lf	220	2.92	3.00
18"	lf	150	3.45	4.00
inlet, type A	ea	1	225.00	140.00
type B	ea	2	200.00	100.00
Pipe, culv, 24"	lf	296	8.75	5.50
Manholes, sanitary sewer	ea	3	288.00	275.00
Electrical work, ext	ls	job	9,800	11,000
Conc, pavement	cy	4,900	16.00	15.25
walkways	sy	434	3.60	3.75
curb & gutters	lf	800	2.83	2.50
Cement for paving	bbl	7,350	4.78	4.50
Agg base course, stabil	cy	1,500	8.24	8.75
Bit prime coat	gal	1,370	0.21	0.25
surface course	t	365	12.36	16.00
Excav, outfall canal	cy	2,500	0.77	1.00
Culv, box	ls	job	50,000	64,000
Riprap	sy	225	2.00	6.00
Fence, relocate	lf	572	1.22	1.00
f & i	lf	330	3.27	4.00
Gate, 6', f & i	ea	1	115.00	100.00
vehicular, relocate	ea	1	20.00	40.00
Bermuda grass seed	lb	100	1.50	1.50
Fertil, avail nitrogen	cwt	5	50.00	40.00
Sodding	sy	12	2.00	4.00
Pipe sleeve, 18"	lf	85	5.50	4.00

Time allowed: 300 calendar days
Liquidated damages: $100.00 per day

New York Transmitter Station Improved

Two new antenna houses and improvements of the existing transmitter building of the WNYC Municipal Broadcasting Station at 10 Kent Street in Brooklyn, New York, will amount to $36,600.

The three contracts as awarded by the Department of Public Works, New York, cover the construction of the two antenna houses, 7 ft 4 in. square and 8 ft high, with transmission ducts and the installation of air conditioning, ventilation and a new illumination system in the existing building. They went to E. J. Lee Construction Incorporated, to M & R Air Conditioning Corporation and to Theodore Kaish, all of Brooklyn, New York.

Concrete blocks, concrete, corrugated aluminum roof covering and metal and glass partitions are furnished by the owner.

Bidders are:

General Construction Work for Alteration and Addition

1C E. J. Lee Co., Inc., Brooklyn, N. Y. $5,920
2 Perfect Contracting Co 7,418
11 Chesterfield Contracting Corp 10,124
EE Dept. of Public Works, City of New York 9,500

Air Conditioning and Ventilating Work

1C M & R Air Conditioning Corp., Brooklyn, N. Y. $10,000
2 C. D. E. Air Conditioning Company 12,255
7 Universal Air Conditioning Corp 17,689
EE Dept. of Public Works, City of New York 14,000

Electrical Work and Lighting Fixtures

1C Theodore Kaish, Brooklyn, N. Y. $20,680
2 C & D Electric Co., Inc 24,170
9 Public Improvements, Inc 33,370
EE Dept. of Public Works, City of New York 24,000

Items	Unit	Quantity	Unit Prices 1C	2
Temp light syst, install & remov	ls	job	$250.00	$600.00
maintain, energize & de-energize	hr	120	4.75	4.75
All other work	ls	job	19,860	23,000

Bids: 1-3-56
Time allowed: 120 calendar days
Liquidated damages: $30.00 per day

Again in '55...

MACK

1st* IN DIESEL TRUCK SALES

and by the biggest margin ever!

*based on official A.M.A. factory sales figures. Nearest make attained 17.16% of the market.

42.06% of all diesel trucks sold in 1955 were MACKS!

Operators everywhere, in all kinds of hauling operations, have again made Mack their No. 1 favorite among *all* diesel trucks. And their margin of preference is the biggest so far! Regardless of competitive claims, Mack owners have learned from millions of miles of heavy-duty operation how truly outstanding are Mack trucks powered by the famous Mack Thermodyne Diesel engine. They're *first* in earning power . . . because they're *first* in fuel economy, *first* in low-cost maintenance, and *first* in rugged long life. See your Mack branch or distributor for the full story. Mack Trucks, Empire State Building, New York 1, New York.

MACK
first name for
TRUCKS

3961-A

Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Mar 15 — Iron and Steel Products; Pipe
- Mar 22 — Wood Products, Glass, Explosives, Chemicals
- Mar 29 — Clay Products, Lime, Plaster Paint, Roofing; Wage Rates, Building Board, Lath, Insulation

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C/L lots cash, dis. not deducted			SAND AND GRAVEL Per ton, carload lots			CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8x8x16-in." truckload del." per block		CONCRETE Ready Mixed 1:2:4 ave.
	Paper	Bulk	Mortar	Gravel, 1½ in.	Gravel, ¾ in.	Sand	1½ in.	¾ in.	1½ in.	¾ in.	Sand grav.	Lt. wgt. agg.	50 c.y., del.
Atlanta	$4.12a	$3.71a	$3.61	$2.75	$2.75	$2.50‡	$2.14	$2.24	$1.45	$1.55	$0.18	$0.195	$13.25g
Baltimore	4.04a	3.63a	3.43	2.70‡a	2.70‡a	2.20‡a	2.75‡a	2.80‡a	1.95‡a	1.90‡a	.18	.18a	12.15
Birmingham	3.73	3.60e	.....	2.53m	2.53m	2.13m	2.75	2.75	1.35	1.55	.18	.18	11.55
Boston	4.67b	4.21b	4.47	3.00a	3.00a	3.00a	1.69a	1.78a	.....	.....	.23	.265a	14.00A
Chicago	3.99a	3.57a	3.72	3.60‡b	3.60‡b	4.00‡b	3.75‡b	3.75‡b	3.25‡	3.25‡	.23	.235	13.50
Cincinnati	3.95c	3.70c	3.73	2.19‡c	2.24‡c	2.24‡•	2.54‡c	2.54‡c	.....	.....	.195	.225a	12.20
Cleveland	N.A. in C.L.	3.50e	.....	2.05ef	1.85f	1.65	4.10‡a	4.10‡a	3.35‡a	3.15‡•	.....	.23	15.45
Dallas	3.35a	2.95a	3.23	2.42	2.53	1.84	2.22	2.38	.....	.....	.11e	.2675	11.25
Denver	4.50a	4.09a	4.59	1.85	2.00	1.20	.....	.....	.....	.....	.23	.255a	10.70
Detroit	4.05a	3.45a	3.70	4.25‡b	4.28‡b	4.00‡b	3.75‡	3.75‡	3.50‡	3.50‡	.22	.22a	14.00
Kansas City	4.20b	4.00b	4.00	1.65	1.65	2.00‡a	2.00‡a	2.00‡a	.....	.....	.20a	.22c	13.25b
Los Angeles	4.92ck	4.48ck	5.40	2.41‡a	2.76‡a	2.41‡a	2.41‡a	2.46‡a	.....	.....	.145/m	.255m	12.96/k
Minneapolis	4.35a	3.94a	3.86	2.70‡ag	2.70‡ag	1.80‡ag	3.25‡ag	3.25‡ag	.....	.....	.19	.....	13.35f
Montreal	3.11d	2.86d	.....	1.95‡a	2.20‡a	2.25‡a	1.95‡i	2.20‡i	.....	.....	.20	.20a	10.80ek
New Orleans	3.55a	3.15a	3.48	2.44	2.44	2.00	.....	.....	1.45	1.65	.275	.....	13.65
New York	4.37a	3.96a	3.71	3.05kk	3.05kk	2.00kk	2.90kl	2.90kl	.....	.....	.....	.....	15.70an
Philadelphia	3.88/4.27‡a	3.57/3.94‡a	3.49/4.12‡	2.85‡ap	2.85‡ap	2.35‡ap	2.70‡	2.80‡	2.00	2.35	.22/.28	.....	13.20de
Pittsburgh	4.15a	3.76a	3.75	2.40‡	2.40‡	2.20‡	2.60‡	2.60‡	2.15	2.15	.25d	.31	14.00
St. Louis	3.95/4.18c	3.80/3.76c	3.70/4.01	3.25am	3.10am	2.40/3.10am	1.60j	1.70j	.....	.....	.22	.28c	13.25
San Francisco	3.83c	3.39c	.....	2.02	2.02	2.12	2.17	2.17	.....	.....	.24	.28ci	12.15c
Seattle	4.30a	3.75a	.....	4.00‡bm	4.00‡bm	4.00‡bm	4.50‡bm	4.50‡bm	.....	.....	.28	.38	13.30j
Toronto	3.97	3.77	3.77	2.40	2.40	2.00	2.00	2.00	2.00	2.00	.35	.35c	14.15

‡ Delivered. * Prices incl. dealers discount except as noted.

CEMENT: •a Less 10¢ disc, 15 days. •b Less 2% disc, 15 days. •c Less 10¢ disc, 10 days. •d Truckload lots, deliv. 10¢ disc, 20 days. •e Truckload lots, destination price. •h LCL.

SAND, GRAVEL, STONE & SLAG: •a Truck lots. •b Per cu. yd. •c 5 tons or more. •e ½". •f Pea gravel. •g Less 5% for cash. •h Less than 5 tons. •i Plus 5% mun. & prov. tax •j F.o.b. quarry. •k Barge lots asd. •l F.o.b. scow Hudson river. •m Less 2% for cash. •n F.o.b. cars. •o 1–3 mi zone. •p Add 10¢ for ea. add'l mi zone.

CONCRETE BLOCK: •a Cinder •b Waylite. •c Haydite. •d Celocrete •e 5½ x 8 x 12 in. •f 8 x 4 x 16. •g F.o.b. truck at job. •i Less 2% for cash •j F.o.b. plant San Rafael. •m F.o.b. yard.

READY MIXED CONCRETE: •a 5 cu. yds. or over del. Man. •b 25 cu. yds or more •c 10–100 cy. brackets. •d 1–3 mi. zone. •e 2,000 lb comp. •f 2,500 lb. comp. •g Less 25¢ disc, 15 days. •h Less 50¢ for cash. •i 5% off for cash. •j 2% off for cash. •k Federal tax included. Add 5% mun. & prov. •l 1:2½:3½. •m F.o.b. yard. •n Plus escalator clause. •o Add 15¢ for ea. add'l 3-mi zone.

CASH DISCOUNTS CEMENT to Contractors: Truck delivery, 2% for cash on 10th of month; on carload deliveries, no trucking, same as dealer cash discount 10¢ per bbl. for payment within 15 days of date of invoice. Subject discount 10¢ per bbl. 20 days in Montreal.

CURRENT MAXIMUM PRICES AT CEMENT MILLS

Charge for bags not included. For paper bags add 40¢ per bbl., not refundable.

	Bulk		Bulk		Bulk		Bulk		Bulk
Richard City, Tenn	$3.05†	Buffington, Ind	$3.10†	Steelton, Minn	$3.20†	Muskegon, Mich	$3.15†	Toledo, O	$3.15†
Clinchfield, Ga	3.05†	Independence, Kan	2.95†	Leeds, Ala	3.00†	Saginaw, Mich	3.15†	Milwaukee, Wis	3.20†
Kingsport, Tenn	3.05†	Hannibal, Mo	3.10†	Duluth, Minn	3.20†	Wyandotte, Mich	3.15†	Green Bay, Wis	3.15†
West Des Moines, Iowa	3.10†	Northampton, Pa	3.05†	Hudson, N. Y	2.75†	Buffalo, N. Y	3.25†	Ironton, O	3.15†
Nazareth, Pa	3.05†	Universal, Pa	3.20†	Alpena, Mich	3.05†	Oswego, N. Y	3.30†	Montreal City	2.56†
Bath, Pa	3.05†	Waco, Tex. (+ 10¢ tax)	3.10†	Detroit, Mich	3.15†	Cleveland, O	3.15†	W. Winfield, Pa	3.20†

† *Prices to hold for first quarter of 1956.*

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK			PAVING ASPHALT Per ton, less than 80 penetration		ASPHALT BINDERS—FLUXES Per gal., 80-300 penetration		CUTBACK ASPHALT MC per ton		ROAD OIL Per gal.	ASPHALT EMULSION RSI Per gal.	
	Granite Per M lots of 50,000 4x4x8 in.	Brick per M 3x4x8½ in. carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	Tank car	Drums	Tank car	Drums	Tank car	Drums	Tank car	Tank car	Drums
Atlanta	.....	.....	.....	$27.60	$40.00	$0.118	$0.23	$0.114Pw	$0.276Pw	$0.15	$0.15	$0.25
Baltimore	180.00‡	.....	.....	21.50h	.....	.092i	0.182i	.10weE	.195weE	.10s	.105s	0.195s
Birmingham	.....	62.00s	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Boston	.....	.....	.....	22.00ap	35.00ap	22.00as	30.00as	.09aFw	.195•Fw	.095a	.095aG	.175aG
Chicago	155.00‡	85.00‡b	3.95/4.00‡j	21.85b	31.85b	20.85bv	30.85bv	.10weH	.18weH	.09b	.....	.....
Cincinnati	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cleveland	.....	82.00d	5.15g	23.00A	.....	23.00A	.....	.1025AwF	.....	.....	.1025AG	.20AG
Dallas	•	40.00	•	24.08	43.09	.1016	.2103	28.91	50.44	.098	.1187	.1960
Denver	.....	80.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Detroit	.....	111.00	.....	27.21	.....	27.21o	.....	.1188wI	.....	.0966	.....	.211
Kansas City	•	•	•	8.00el	.....	17.40e	.....	.075•wJ	.....	.065c	0.11	.....
Los Angeles	•	.....	•	17.00dmz	.....	17.00dvz	.....	19.00dz K	.....	18.00dv	.0875j	.1878j
Minneapolis	.....	.....	2.97k	25.00	.....	25.00	.....	0.10w	.....	0.095	.1075	.....
Montreal	•	•	•	27.00n	39.60n	135n	.198n	16.50nwE	20.90nwE	.132n	.197ns	.239ns
New Orleans	.....	.....	.....	17.50e	.....o	17.50es	.....o	.085wE	.....o	.085BL	.085BL	.....
New York	.....	.....	3.35f	23.80qCD	44.56qD	23.80wCD	44.56wD	.1073wCDF	.1939wDF	.....	.1073CD	.1968D
Philadelphia	175/185	110/120	4.05	22.00	.....	22.00	.....	.095wF	.....	.095	.....	.....
Pittsburgh	165.00	48.00	4.60	27.00	38.00	10	.21	27.00E	40.00E	.098	.11	.224
St. Louis	.....	.....	.....	18.75f	.....	.1704	.....	.0863fwM	.....	0.1575	.10	.....
San Francisco	.....	70.00e	.....	20.00g	37.00g	20.00gks	37.00gks	21.00gN	38.50gN	19.75r	.09g	.18
Seattle	.....	.....	.....	23.50a	37.50b	18.25kv	.....	25.50K	.....	20.75kx	.09A	.10dr
Toronto	.....	.....	4.03	33.80	55.14	0.19	0.24	0.20w	0.25w	0.20	0.20	.24

h Delivered.

PAVING BRICK & BLOCK: •a CL. •b 3 x 4 x 8. •c 2½ x 8½ x 4. •d LCL, truck deliveries. •e Not used. •f 2" interior & treat. •g 3" •h 2" tr, & •i 3 x 3½ x 8½. •j 2½", 6 lb. tr.

ASPHALTS: •a Price at plant, Everett, Mass. •b F.o.b. refinery, Lockport, Ill. •c F.o.b. Sugar Creek, Mo. •d F.o.b. refinery, El Segunda. •e F.o.b. Baton Rouge. •f F.o.b. Hartford, Ill. •g F.o.b. Richmond, Calif. •h F.o.b. Martinez. •i F.o.b. refinery, Baltimore. •j F.o.b. refinery, Inglewood, Calif. •k 50-110 penetr. •l Less than 100 penetr. •m 40-80 penetr. •n Fed. tax included; add 5% for mun. & prov. •o Drums not avail. Shipped in steel bbl. •p 60-70 penetr. •q 40-85 penetr. •r In customer's drums. •s Shipped in drums, per drum. •t 85-200 penetr. •u Per 100 gal. •v Per ton. •w Per gal. •x Also tank trucks. •y F.o.b. Oakland •z F.o.b. Edmonds •A F.o.b. refinery, Cleveland. •B F.o.b. Destrehan, La. •C Bulk. •D Prices based on transporting to Manhattan via truck. •E RC. •F Also RC. •G Also MS, SS. •H RC 0-5 incl. •I MC 4. •J MC, RC .0675. •K MC 3, 4 & 5. •L Ms. •M MC 1-5, RC 1-5, .089. •N MC 3. •P F.o.b. refinery Savannah: $0.09 gal., tank cars; $0.20 gal., drums.

Western Contracting Corp. cuts drilling costs on $10 Million turnpike contract with TIMKEN® multi-use bits

LOCATION: Sections 13-14, Ohio Turnpike.

OPERATING CONDITIONS: Drilling berm in shale and sandstone.

SECTIONS 13 and 14 of the Ohio Turnpike, in the vicinity of Hudson, is being worked by Western Contracting Corp., of Sioux City, Iowa. At one highway intersection there are about 1,000,000 cubic yards of rock to excavate from an open cut 80 to 90 feet deep. For drilling berm they are using two wagon drills; two more will be added later.

Since the ground is shale and sandstone, Western Contracting found Timken® *multi-use* bits the most economical. Drilling speed and bit life are high. Timken multi-use bits are usually cost-cutters in ordinary ground, when full increments of steel can be drilled—with correct and controlled reconditioning, of course!

But for hard and abrasive ground, for exceptionally deep holes, small-diameter blast holes and constant-gauge holes, Timken carbide insert bits are usually most economical. Their longer life more than compensates for their higher cost.

Both types of Timken bits, in dozens of different sizes, fit the same steel. This means that, if the ground changes, you easily and quickly switch to the type of bit that is most economical. No need to lose time hunting up different steels.

All Timken bits are made from electric furnace Timken fine alloy steel, and have the shoulder union that is designed to keep drilling impact from damaging threads.

It will be worth your while to get our recommendation on what bit to use for your present job. Write: The Timken Rock Bit Engineering Service, The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

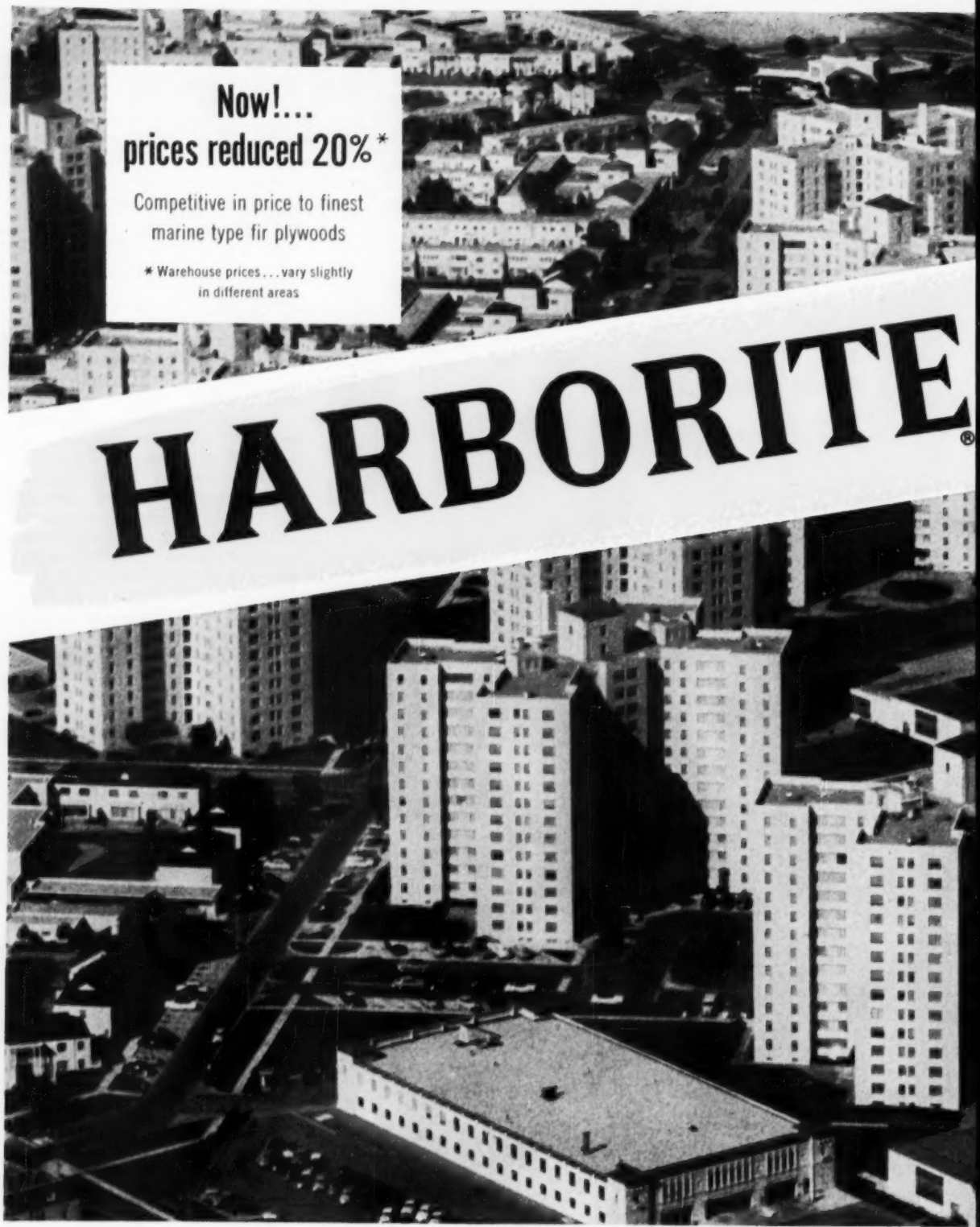
TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

your best bet for the best bit...for every job

Timken threaded multi-use rock bit

Timken threaded carbide insert rock bit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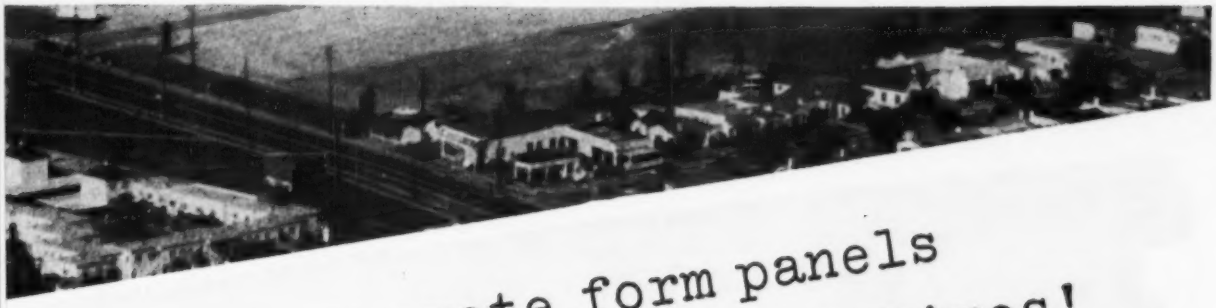
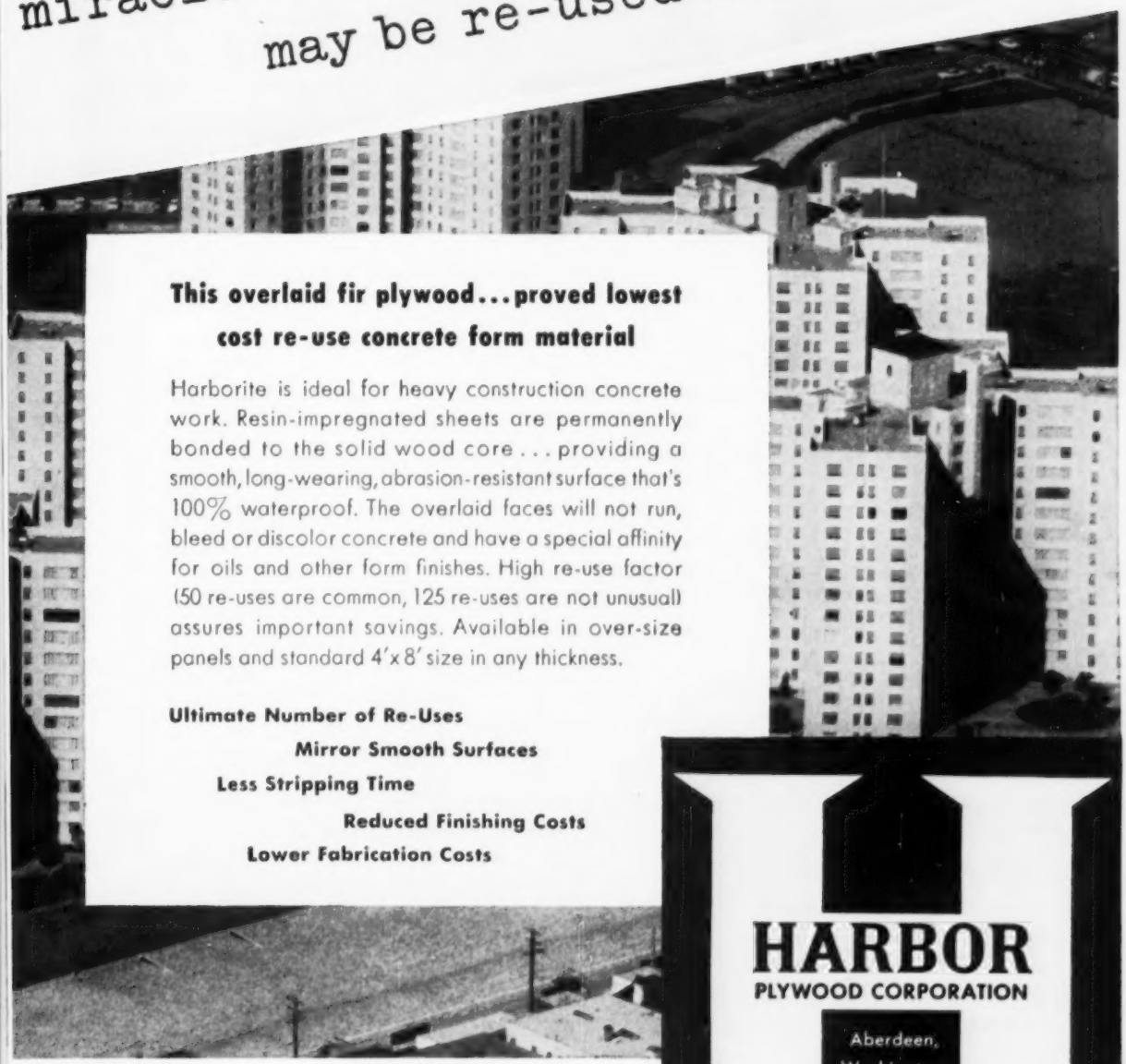


miracle concrete form panels may be re-used 125 times!



This overlaid fir plywood...proved lowest cost re-use concrete form material

Harborite is ideal for heavy construction concrete work. Resin-impregnated sheets are permanently bonded to the solid wood core . . . providing a smooth, long-wearing, abrasion-resistant surface that's 100% waterproof. The overlaid faces will not run, bleed or discolor concrete and have a special affinity for oils and other form finishes. High re-use factor (50 re-uses are common, 125 re-uses are not unusual) assures important savings. Available in over-size panels and standard 4′ x 8′ size in any thickness.

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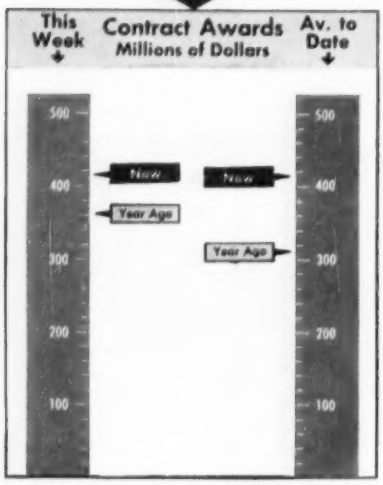
Construction Scoreboard

Activity this Week



AMOUNT OF CONTRACTS LET

By Ownership	This Week	Cum. 10 wks 1956	Chge %
	$ millions		
Federal	$22.4	$358.9	+13
State and Municipal	125.7	1,151.9	+36
Total Public	148.1	1,510.8	+29
Total Private	265.7	2,632.7	+35
U. S. Total	$413.8	$4,143.5	+33
By Type of Work			
Waterworks	$3.2	$50.5	— 6
Sewerage	2.7	144.8	+99
Bridges	9.3	106.4	+10
Highways	63.3	409.9	+28
Earthwork, Waterways	7.4	116.4	+63
Buildings:			
Public, Excl. Hsg.	32.2	350.1	+15
Public Housing	13.7	90.3	+162
Private Housing	103.3	1,262.1	+ 4
Commercial	23.6	450.9	+80
Industrial	119.5	804.7	+107
Unclassified	35.6	357.4	+18
U. S. Total	$413.8	$4,143.5	+33

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

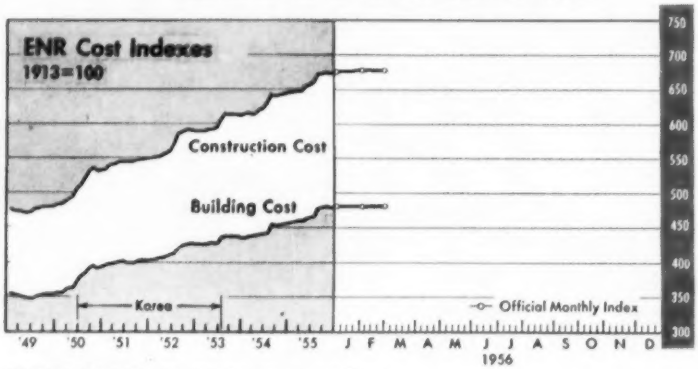
NEW CAPITAL FOR CONSTRUCTION

	Week of Mar. 1	Cum. 9 wks 1956	Chge '55-'56 %
	$ millions		
Corporate Securities	$72.9	$406.7	—20
State and Municipal:			
All Except Housg.	96.1	720.2	+13
Housing	...	20.3	—43
Federal Loans	2.9	17.9	+ 7
Federal Aid	...	...	...
Total Nonfederal	$171.9	$1,165.1	— 3
Federal Appropriations:			
In U. S.	$34.4	$...	...
Outside U. S.	...	...	...
Total New Capital	$206.4	$1,199.5	—0.3

Cost Indexes as of Now

ENR INDEXES (1913–100), 20-cities' average	1956 Mar. 1	Percent Change from last Month	Year
Official Monthly Index for March '56			
Construction Cost	680.20	0	+5.3
Building Cost	483.14	+0.01	+5.1

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.845
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.



WAGE RATES, 20-cities' average, per hour			
Common	$2.117	0	+4.8
Skilled (average 3 trades)	3.310	0	+3.8
Bricklayers	3.565	0	+3.1
Structural Ironworkers	3.294	+0.1	+3.9
Carpenters	3.070	0	+4.4
MATERIAL PRICES, 20-cities' average			
Structural Steel (average 3 mills), per cwt	$4.60	+0.0	+8.2
Lumber, 2x4, Fir, per M fbm	121.138	−0.4	+4.5
Lumber, 2x4 Pine, per M fbm	102.100	+0.8	+5.8
Cement, bulk, per bbl.	3.684	0	+4.6
Sand, per ton	2.417	0	+5.0
Ready-mixed concrete, per cu yd	13.171	−0.1	+6.1

ENR INDEX REVIEW

	Construction Cost 1913=100	Construction Cost 1949=100	Building Cost 1913=100	Building Cost 1949=100	Volume 1913=100	Volume 1949=100
1955						
Mar.	645.70	135.36	459.63	130.65	691	200
Apr.	647.49	135.74	460.62	130.94	609	176
May	653.26	137.01	462.55	131.65	731	211
June	655.96	137.51	464.82	132.13	633	183
July	660.09	138.38	467.52	132.90	699	202
Aug.	672.24	140.92	478.03	135.89	508	147
Sept.	672.74	141.03	479.15	136.20	576	166
Oct.	673.89	141.27	477.99	136.44	628	182
Nov.	673.20	141.13	479.30	136.25	561	162
Dec.	673.13	141.11	478.70	136.08	544	157
Annual Average	659.72	138.31	468.80	133.33	600	173
1956						
Jan.	676.36	141.79	480.48	136.58	645	186
Feb.	680.20	142.59	483.08	137.32	736	213
Mar.	680.20	142.59	483.14	137.34	...	...

MATERIALS SHORTAGES

- **Gypsum board, sheathing and lath:** Atlanta, Baltimore, Birmingham, Denver and Detroit. Lath short in Minneapolis.
- **Fiber board insulation:** Boston, Denver, Detroit (allocated), New York and Pittsburgh. Seattle deliveries slow, but stocks adequate.
- **Glass fiber insulation:** Boston, Kansas City, New York and St. Louis.
- **Cement:** No shortages reported in 22 cities, but deliveries are slow in New Orleans and Philadelphia.

For record of ENR cost indexes for preceding years see folded insert chart ENR September 29, 1955. Extra copies of chart are available at 50 cents.

February Awards Set Record for Month

Contracts for private work soar 43% over January's total; mass housing climbs 65%; industrial building tops '55

Contract awards for heavy construction posted still another record last month.

February contracts added up to $1,781.2 million, an impressive 12% above January which, in turn, had a new record on the books. February's total is 64% better than a year ago. And, the cumulative total for the first two months of '56 is resounding 42% ahead of '55.

Private construction bolstered the contract volume in February with awards of $1,243.8 million, up 43% from January and almost double those of a year ago.

Public contracts sagged after setting a record in January, dropping 26% to $537.4 million. But this was still a hefty 30% over February, '55.

• **Private awards up**—Mass housing and industrial buildings clipped along at a fast pace. Housing pushed 65% ahead of January to set new high for the month at $616.7 million, and industrial building awards jumped 45% ahead of January to $377 million. That total was 210% over the comparable industrial building figure a year ago.

Commercial buildings declined a bit (3%) to $19.8 million. But the total still more than doubled the February, '55 figure. Private unclassified contracts of $58.2 million were also heavier than the January awards, up 67%.

February's achievements brought every classification of private work well ahead of last year.

• **Public works**—Highway contracts of $157.9 million set another record for the month, up 8% from January's record, and 31% ahead of a year ago. For the first two months of this year, ENR's figures show a total of $304.4 million in road contracts, up 27% over a year ago.

Public buildings (excluding public housing) slumped sharply from the high January total of $105.6 million, but the margin over last year, on a cumulative basis, is 27%. Public housing is still growing. Another $48.1 million was added in February.

February awards for bridges added up to $48.6 million—a new high for the month. And, the high February total helped to bring the two-month cumulative total to $87.2 million, up 15% from last year.

Sewerage awards skidded down to $24.5 million, far below the $112.2 million recorded for January when a single large Pittsburgh job swelled the total.

Waterworks contracts, at $22.5 million, were slightly ahead of January. But on a two-month basis, this is the only category of construction that still trails 1955. The gap is 9%.

Unclassified public construction ran above the $100-million mark for the second consecutive month bringing the January-February total to $212.6 million, 21% above the comparable '55 period.

• **All regions top '55**—By the end of February, every region had moved ahead of 1955 as far as total construction awards were concerned. The Middle Atlantic region in the first two months of the year has chalked up more than $1 billion in awards, 48% ahead of last year. The West of the Mississippi area is not far behind with $874 million, up 54% from last year. The smallest gain (3%) appeared in the Far West, besieged by heavy rains and some floods in recent weeks.

A single, giant-size housing contract for $200 million in Colorado accounts for the exceptional volume of residential mass housing activity in the West of the Mississippi region. In the first two months of the year, this area, with $439 million in housing awards, overshadowed all other regions and chalked up a margin of 131% over last year.

Second largest volume of mass housing contracts turned up in the Middle Atlantic region, but the $283 million

ENGINEERING CONSTRUCTION CONTRACTS—FEBRUARY 1956

ENGINEERING NEWS-RECORD *reports continental U. S. Construction projects of the following minimum costs—Waterworks, excavation, drainage and irrigation,* $44,000; *other public works,* $73,000; *industrial buildings,* $93,000; *other buildings,* $344,000.

Four Weeks—Thousands of Dollars (000 Omitted)

	February, 1956 — New England	Middle Atlantic	South	Mid-West	West of Mississippi	Far West	Total U. S.	U. S. Cumulative Two Months 1956	1955	% Change '55 to '56	Canada February 1956
Public Works											
Waterworks	87	3,075	2,192	5,664	6,785	4,698	22,501	44,961	49,377	− 9	1,533
Sewerage	463	11,615	1,715	7,837	1,882	1,016	24,528	136,738	56,961	+140	744
Bridges	13,575	7,042	10,779	6,233	7,511	3,441	48,581	87,218	76,120	+15	2,402
Earthwork and waterways	552	1,716	5,286	103	11,596	12,575	31,828	105,730	60,128	+76	572
Streets and roads	32,514	27,765	21,535	23,268	37,834	15,008	157,924	304,432	239,460	+27	5,634
Public buildings, residential	.....	19,234	752	11,061	7,034	.....	38,081	72,863	8,092	+800	.....
Other public buildings	6,270	20,798	12,580	17,156	24,156	24,634	105,594	298,839	235,284	+27	11,914
Unclassified	7,798	15,852	13,533	9,430	36,971	24,771	108,355	212,628	175,358	+21	146
Total public	**61,259**	**107,097**	**68,372**	**80,752**	**133,769**	**86,143**	**537,392**	**1,263,409**	**900,780**	**+40**	**23,245**
Federal government (included in above classifications)	7,436	5,357	16,164	5,328	51,379	37,159	122,823	317,412	267,280	+19	3,475
Private											
Bridges	.....	.....	.....	.....	.....	.....	.....	806	200	+303	.....
Industrial buildings	15,716	52,192	106,783	126,979	27,135	48,244	377,049	636,209	350,033	+82	60,875
Mass housing	14,127	159,266	10,487	123,788	293,788	15,283	616,739	989,944	877,010	+13	68,340
Commercial buildings	12,446	82,014	10,617	28,320	43,194	15,246	191,837	390,596	183,588	+113	7,415
Unclassified	1,080	1,005	3,974	1,163	30,291	20,659	58,172	93,062	68,573	+36	1,850
Total private	**43,369**	**294,477**	**131,861**	**280,250**	**394,408**	**99,432**	**1,243,797**	**2,110,617**	**1,479,404**	**+43**	**138,480**
Total Engineering Construction:											
February, 1956—4 weeks	**104,628**	**401,574**	**200,233**	**361,002**	**528,177**	**185,575**	**1,781,189**	.....	.....	....	**161,725**
January, 1956—4 weeks	100,206	649,321	143,615	227,345	345,515	126,835	1,592,837	.....	.....	....	125,357
February, 1955—4 weeks	51,478	303,408	131,616	202,771	265,066	130,505	1,084,874	.....	.....	....	150,822
Two Months—1956	**204,834**	**1,050,895**	**343,848**	**588,347**	**873,692**	**312,410**	.....	**3,374,026**	.....	**+42**	**287,082**
Two Months—1955	118,640	711,486	224,065	454,622	567,510	303,861	.....	.....	2,380,184	....	236,357
% Change '55 to '56	+73	+48	+53	+29	+54	+3	.....	.....	.....	....	+21

in awards there fell short of last year by 4%.

Biggest decline in housing contracts came in the Far West, where only $30 million was put under contract. That's a decline of 79% from last year. New England, rapidly overcoming flood ravages, nearly doubled its housing activity in the first two months when compared with 1955.

Industrial building in the South and Midwest each topped the $100-million mark in February as major power plants went under contract in both areas. Every area except the West of the Mississippi region is running well ahead of last year by a good margin.

Commercial building promises to be strong in all parts of the nation. At the end of February, every region registered a gain over last year, ranging from 9% for the Far West to 180% for the New England states.

Highway work is gaining momentum in all sections except the Middle Atlantic region. New England shows the biggest gain over last year—an increase of 97%.

More Cement

Marquette plans doubling of Brandon, Miss., mill

Marquette Cement Manufacturing Co. plans to double the capacity of its cement mill at Brandon, Miss. Construction will start soon on a new 450-ft kiln and related production equipment designed to increase the Brandon plant capacity from its present rate of 1,250,000 barrels to 2,500,000 barrels annually.

The expansion program is scheduled for completion by May of next year.

As part of the program, Marquette will build a large loading terminal on the Yazoo Canal site in Vicksburg, Miss., and a fleet of river barges to handle the increased production at Brandon.

Marquette's expansion plans came in the wake of predictions by some cement company executives that expansion plans will be cutback. Current capacity is about 315,000,000 barrels a year. If all presently-scheduled expansion plans are carried out, capacity will jump to 370,000,000 barrels by the end of 1956.

Among those predicting some reduction in cement expansion plans was Chris Dobbins, president of Ideal Cement Co., in Denver. Said Dobbins: "If all presently-announced capacity is built, there'll be too much cement around."

Michigan Senate Gets Plan To Ease Water Shortages

After hearing warnings that the state's economic development faces early stagnation unless solutions are found quickly for its water shortage and sewage problems, the Michigan State Senate is studying two measures that could have far-reaching effects.

The first proposal is creation of an overall state agency to cope with the water supply and sewage problems. And, to break the financing bottleneck, a second proposal calls for a constitutional amendment to authorize a $200-million bond issue to be used as a revolving fund to pay for the needed improvements.

The scope of the construction program needed was indicated by Detroit Councilman Edward Connor, of Detroit, who testified as the spokesman for a six-county metropolitan area committee. Connor told the Senate State Affairs Committee that it would take $2 billion to meet present and future water supply and sewage treatment needs in his area alone.

FHA and VA officials and repre-

Bronze-Clad Skyscraper

The 38-story House of Seagram building in New York City will be faced on the outside with bronze panels.

General Bronze Corp. signed a contract last week with the owners, Joseph E. Seagram & Sons, Inc., manufacturer of distilled liquors, for 1,600 tons of bronze to cover 153,000 sq ft of the exterior. The remaining 122,000 sq ft will be glass tinted pinkish gray to blend with the bronze.

On Park Ave., between 52nd and 53rd St., it is being designed by Mies van der Rohe, with Philip Johnson and Kahn & Jacobs as associate architects. George A. Fuller Co. is the general contractor.

sentatives of homebuilder groups also testified at the hearing.

Michigan's approach to the water supply and sewerage problem is similar in some respects to a proposal that has already been given a first reading in the Ontario, Canada, legislature (ENR March 1, p. 17).

March Costs Steady

Wage, freight boosts will break this month's pattern

Construction costs were stable this month following last month's substantial increase. The ENR 20-cities Construction Cost Index for March is 680.20, based on 1913 equals 100, virtually the same as in February. The Building Cost Index stands at 483.14, up a light 0.01% over a month ago.

Although both cost indexes were steady, they are at their highest points on record. The Construction Cost Index is 5.3% above March, '54, and the Building Cost Index is up 5.1%.

• **Price hike expected**—There are signs that this cost stability will end this month. Lumber prices have shown a tendency to firm up in a few cities in recent weeks. Anticipating higher costs because of the new minimum wage law of $1 an hour, which becomes effective March 15, prices of southern pine are being raised at some mills in the South.

Lumber dealers already have boosted their pine prices in New York and Cleveland. Baltimore lumber dealers report trade rumors that higher pine prices are on the way, while San Francisco sources expect pine to increase at least $4 per Mfbm because of the higher minimum wage.

Douglas fir lumber prices have gone up in a few cities in recent weeks. Mill production and transportation from the mills was upset by the heavy rains and floods at the end of '55.

As a result of the West Coast troubles, deliveries are slow in several cities and prices are rising. However, the pressure on prices for fir has been less marked than for pine.

• **Higher freight rates**—Lumber prices also will go up because of a general 6% rise in freight rates, effective March 7. The Interstate Commerce Commission approved the higher rates for railroads, certain water carriers and freight forwarders. A maximum increase of 6 cents per 100 lbs was set for lumber and other items listed under the lumber rate category.

(B&F continued on page 144)

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No wire is used in the carcass of Hamilton REVELATION Suction Hose. Specially-treated, hard-twisted cord and multi-ply heavy duck insure recovery to original shape and prevent failure due to crushing abuse.

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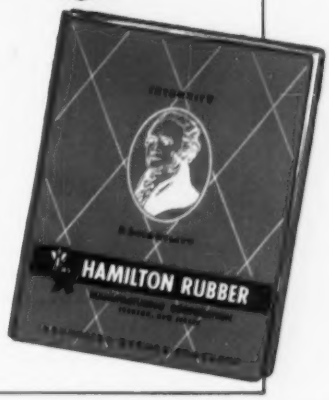

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Compact low and narrow

It's the NEW 155 Trenchliner®

Look at the low profile of this small 155 Parsons Trenchliner! Working height is only 7 feet-4 inches. This lets it dig under trees, overhanging branches and other overhead obstructions where larger trenchers can't go. Width over crawlers is only 5 feet-4 inches for work and travel between buildings, in narrow alleys, and other restricted operating areas. Close side-clearance puts trench within 21 inches of walls, poles, fences. Spoil conveyor dodges side obstructions without swerving from grade-line — shifts through machine by power in less than 1 minute. Belt direction is instantly reversible, places spoil bank on either side of trench.

For all its compactness, this utility-size 155 offers a big "plus" in work capacity. It digs 16 to 26 inches wide — 8 feet deep. You get 30 digging speeds (60 optional) from 5.8 inches up to 25 lineal feet per minute. Low range lets the 155 "inch" its way past cross-pipes, through rock and other underground obstructions. High range gives maximum feet per minute on cross-country trenching.

Sloping ladder-boom undercuts walks, curbs, gutters, makes vertical set-ins flush with main lines or foundation walls. Positive down-crowd with hydraulic control starts cut fast, maintains accurate grade. In fact, this 155 has all the heavy-duty characteristics of larger Parsons Trenchliners. It has cast-steel buckets, "Tap-In" teeth, spring-cushioned bucket-cleaner, enclosed gearing, tractor-type crawlers with 16-inch grouser treads or 12-inch flat shoes, choice of gas or diesel power. Have your Parsons distributor demonstrate what this new 155 Trenchliner can do for you — call him today.

Want more facts? *Send for* ☐ *spec. sheet* ☐ *bulletin on 155 Trenchliner*

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PARSONS COMPANY

NEWTON, IOWA

(Koehring Subsidiary)

MOBILE 88

Parsons rubber-tired 88 Trenchmobile® drives job to job under its own power at 12.6 m.p.h. — maintains fast schedules. Digs 14½ feet of trench per minute, 8 to 16 inches wide; depths to 5 feet.

Heavy-duty 250

This general-purpose 250 Trenchliner produces up to 9¾ lineal feet of clean-cut trench per minute. Widths, 16 to 42 inches. Depths to 12½ feet. Discharges well beyond edge of trench, or loads trucks.

BIG 310

Equipped with single digging boom, Parsons 310 Trenchliner excavates 17 feet deep, 1½ to 4½ feet wide. With dual booms, it digs 6 feet wide, 12 feet deep — speeds installation of largest sewers, mains, transmission systems, footings. Parsons line of Trenchliners also includes a wheel-type Model 150, full crawler-mounted.

Get 3-tool versatility with Kwik-Mix Moto-Bug®

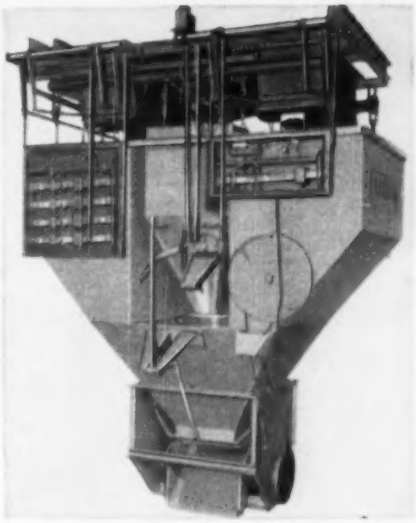
Big R-15 Moto-Bug hauls all kinds of bulk materials in 15 or 18-cubic foot hopper body. Hopper is quickly interchanged wtih 1-ton capacity platform, or ¾-ton (7-foot) fork lift. There's no limit to its usefulness — earns big savings in time and costs. Ask, too, about smaller S-10 Moto-Bug, available with multiple attachments. Kwik-Mix line also includes concrete mixers, plaster-mortar mixers, bituminous mixers — all sizes and types.

KWIK-MIX · Port Washington, Wis.
(Koehring Subsidiary)

Central cement feed prevents "gumming"

With concentric arrangement of aggregates around cement in the Johnson Concentric Batcher, all ingredients are intermingled as they flow through discharge. Reduces dusting, pre-shrinks materials. Cement is weighed individually on precision-beam scale; aggregates on accumulative dial scale or individual beam scales. Johnson Concentric Batcher sizes: 2 to 8 cu. yds., arranged for 2 to 8 aggregates, 1 to 4 types of cement.

C. S. JOHNSON · Champaign, Ill.
(Koehring Subsidiary)



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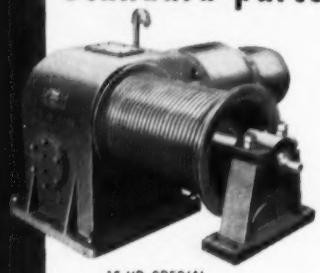

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Costs run 8% over estimates, but . . .

Connecticut Will Build Full Turnpike

The entire length of the Connecticut Turnpike will be constructed despite a $32-million increase in construction costs, State Highway Commissioner Newman E. Argraves announced last week.

Argraves said that an estimated increase of 8% in construction costs will be offset by a 10% increase in estimated revenue.

Overall cost of the turnpike originally was placed at $398 million. The latest estimate is $430 million.

The new construction cost and revenue estimates were contained in a prospectus issued in connection with the Feb. 28 sale of the second series of $100 million in bonds to finance the project. The first $100 million worth of turnpike bonds were sold in April '54.

• **Revise estimates**—Argraves said the latest estimates on construction costs were revised upward after the state studied contracts awarded and rights-of-way acquired to date. The highway commissioner commented:

"We have now purchased, or have appraisals, on at least 70% of all the land we will need for the turnpike. Bids have been received for 86% of the contracts for all of the work west of the Connecticut River to the New York state line. The work west of the river represents 91% of the turnpike job."

Under terms of the original bond sale, the highway commissioner is required to defer letting contracts for the Saybrook-Killingly eastern link of the 'pike until substantially all bids for the western section have been received. The western section extends from Saybrook to the New York state line.

• **Can seek more bonds**—The bond declaration also permits the highway commissioner to request approval of additional bonds for the completion of the expressway to Killingly, if the revised estimates of the consulting engineers show that the entire facility will be self-liquidating.

Argraves reported that Coverdale & Colpitts, consulting engineers on the revenue aspects, now expect toll revenues to run 10% higher than their original estimates.

While revenue prospects are brighter, construction costs also have risen since the private estimates were made in mid-1954.

"The price of cement, steel and lumber has risen approximately 10%, the cost of labor in various categories has gone up 12%, and the cost of acquiring property has gone up at least 10%," Argraves explained.

In addition to increased revenue estimates, higher construction costs also have been offset by savings on interest charges. The original schedule called for sale of the second series of $100-million bonds on Jan. 1, 1955. By deferring the sale for 14 months, the highway commissioner estimated the state had saved "several million dollars" in interest costs.

Business Briefs . . .

• **Caterpillar posts records**—The Caterpillar Tractor Co. reported record sales and profits in '55. Sales totaled $523 million, up 30% over 1954. Profits last year totaled $34 million as against $25 million in '54. To top that, the company is predicting new highs this year. It believes sales of some models will be limited only by manufacturing capacity or by inability to obtain sufficient steel.

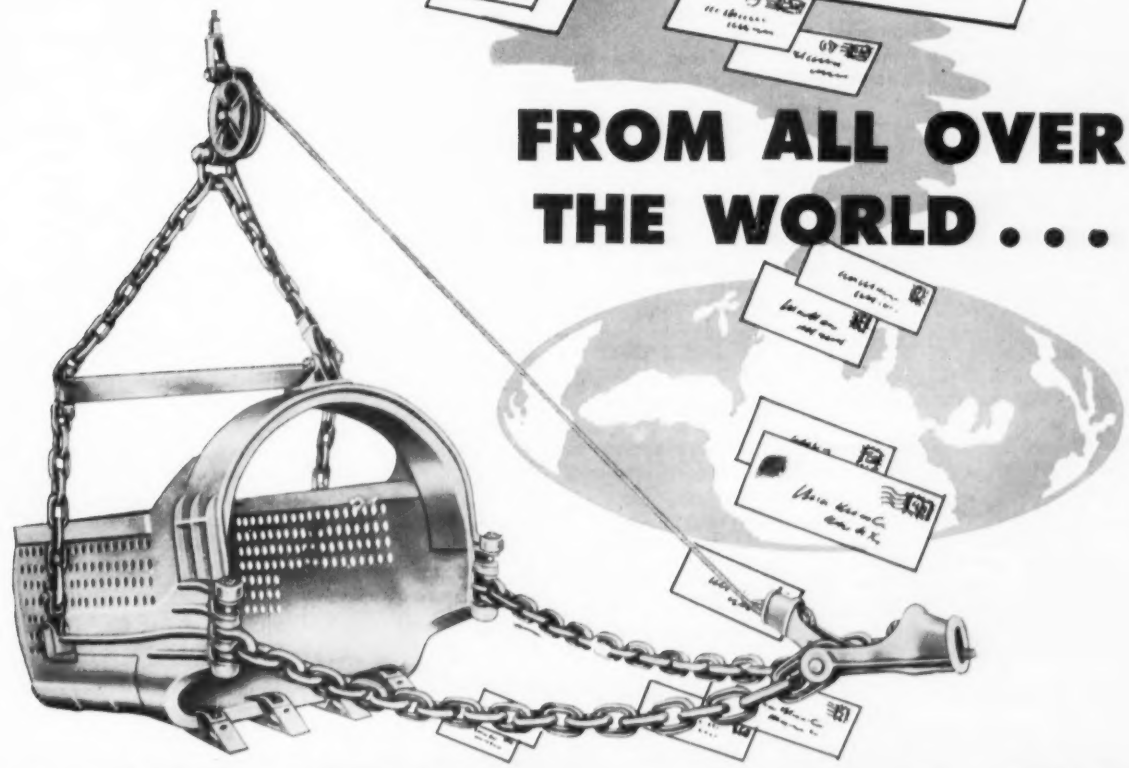
• **Inland Steel expands**—Inland Steel Co., which spent $46 million for plant expansion and improvements last year, will up the expenditures to about $75 million in 1956.

• **Corps' costs rise**—The San Francisco District of the Army Engineers reported a 2.8% increase in its heavy construction contract unit cost index for the last half of '55 as compared with the first half of the year. The index is now at the highest level since the peak established in the last six months of '52.

• **Housing outlook brighter**—The decline in housing starts seems to have leveled off and the outlook for the housing industry is a little better than it was a few weeks ago, according to Arthur F. Burns, chairman of the President's Council of Economical Advisers.

• **VA loan loss 1.3%**—Between 1944 and 1956, the Veterans Administration guaranteed housing loans valued at $33 billion sustained a net loss of only $446 million—or 1.3%, according to Ralph H. Stone, VA deputy administrator. Bulk of the loss was written off two years ago.

REPEAT ORDERS



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The Teamsters Test Autonomy

Conference alliance with longshoremen raises question of AFL-CIO suspension and widens gap in local rifts

The teamsters union kicked up a storm in the ranks of organized labor last week and gave the still young AFL-CIO one of its biggest headaches to date.

During the four-day conference of the International Longshoremen's Association in New York, the teamsters put the final touches on their controversial alliance with the now independent union that controls the Atlantic and Gulf Coast ports—a union that was ousted from the AFL back in 1953 on charges of corruption in its ranks.

Among the calculated risks the teamsters have taken in what looks like a hard-headed, practical business deal is suspension from AFL-CIO.

The pact was concluded last year between the ILA and the Teamsters' Central, Eastern and Southern Conferences, after several months of negotiations. Under the alliance, the two groups are pledged to render mutual assistance and aid in joint organizational efforts. Part of the package is that teamsters refrain from crossing ILA picket lines.

Through the alliance, the teamsters obviously expect to turn to their advantage the waterfront control now exercised by the ILA. Expected return on the investment is economic power.

One of the first steps in the execution of the alliance is a $400,000 teamster loan to help the ILA get back on its feet financially—a rather interesting if not prophetic fact because one of ILA's biggest creditors is reportedly Lewis' United Mine Workers, who spun their way out of the CIO and out of the united labor movement.

• **Suspension?**—Most significant aspect of the ILA alliance is its effect on the AFL-CIO and the teamsters' possible suspension from the new federation.

One of the federation's largest members, the union belongs to the Building Trades, Maritime and Industrial Union Departments. Its president, Dave Beck, is a vice president of the building trades and of the federation, and sits on the AFL-CIO Executive Council.

The New York City Anti-Crime Committee has asked AFL-CIO President George Meany to use the federation's new machinery to smash the alliance. At the merger convention last December, the AFL-CIO declared open warfare on racketeering and corruption and gave itself the constitutional power to oust affiliates involved in corruption.

The suspension formula, however, stacks the cards in favor of the teamsters for two reasons. Not only does the constitution guarantee the integrity and autonomy of affiliates, but the charge it requires to be proved is that the affiliate be "dominated, controlled or substantially influenced in the conduct of its affairs by any corrupt influence."

Meany has already started an investigation. He promises that the AFL-CIO will take such action as the circumstances warrant. Meanwhile, AFL-CIO Vice President Walter Reuther, who has condemned corruption more loudly than all the others, says he "looks with disfavor on any assistance to the leadership of the ILA."

• **Nothing new**—This is not the first time the aggressive teamsters have shown an inclination to play the unity game according to their own rules.

They showed their interest in autonomy and voluntaryism during the merger negotiations; they threatened to walk out of the new AFL-CIO unless they got into the Industrial Union Department; ambitious and jealous of all the jurisdiction they can assert, they have steadfastly refused to accept the principle of the AFL-CIO no-raiding agreement, one of the cornerstones of unity itself; they recently showed a marked lack of interest in the formation of the AFL-CIO's new Committee on Political Education; and it was their ascendant personality and central figure in the ILA alliance, James Hoffa, who led the building trades in their strike at the Detroit plant of Studebaker-Packard.

• **Internal strife**—The week's developments have had no less disturbing effects inside the teamsters union—on both the national and local levels.

To some, the present events may well mark a growing rift between Beck and Hoffa, chairman of the Central Conference and a strong voice in the Eastern and Southern Conferences. Apparent architect of the ILA alliance, Hoffa is asserting the same kind of autonomy that's characteristic of the union itself. One of the interesting sidelights is that the wooing of the ILA pits the teamsters against the rival AFL-CIO International Brotherhood of Longshoremen, which Beck was instrumental in forming. At the moment, Beck says the ILA affair is a local matter that lies entirely in the hands of the autonomous units involved.

On the local level, the pot is boiling in both the ILA and teamster unions. While legal authorities are making it rough for some of the waterfront figures, including ILA President William Bradley, the New York Teamsters Council is having its own troubles, which in turn revolve around Hoffa.

In a Feb. 14 election, John O'Rourke, an ILA proponent who has Hoffa's support, tried to unseat Martin Lacey, incumbent council president. Sixteen votes—all for O'Rourke and all declared valid by Beck—are still impounded and promise to turn the outcome into a court fight.

Meanwhile, one of the anti-Hoffa-O'Rourke factions, smarting under Hoffa's interference in local affairs, plans to torpedo one of the conference system's big goals—area-wide bargaining. In this phase of the dispute, the teamsters' international representative in charge of the New York area, Thomas Hickey, who is also an officer of one of the city's big locals, is pitted against O'Rourke, chairman of the local area-wide bargaining committee.

City May Restrict Use Of Outside Engineers

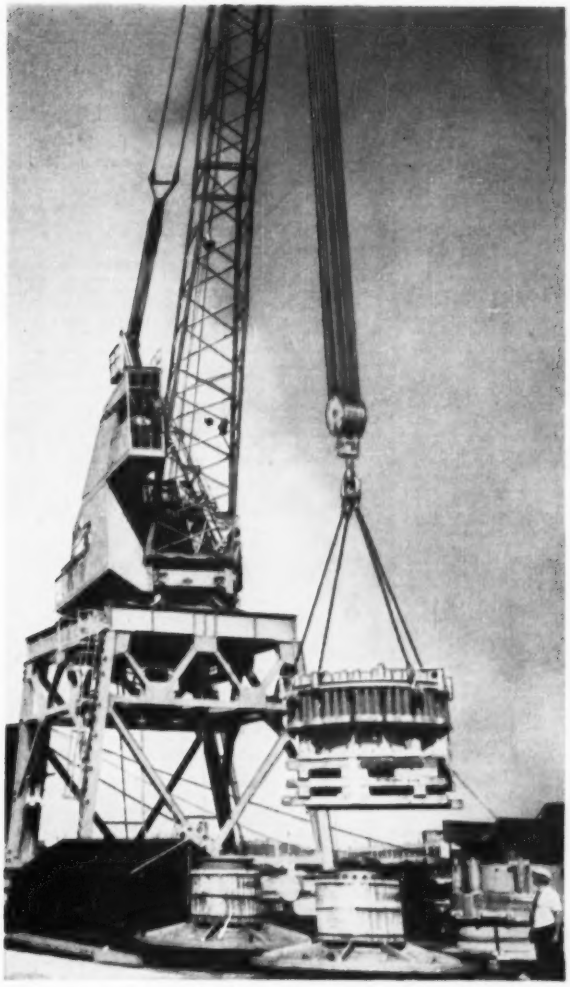
The municipal practice of using outside engineering services is now under study in Philadelphia, with possible curbs in the offing.

Festering for some time, the situation came to a head when the Philadelphia Civil Service Commission withheld its approval of four contracts for outside engineering studies.

The commission, which has no criticism of the work done or fees charged by outside firms, feels that such expenditures are getting out of hand.

Among the problems the city faces are those of being able to hire and keep engineers under present municipal scales and the current administration policy of keeping payrolls to a minimum in engineering categories, while relying on outside contractual services to handle peak loads.

(*Labor continued on page* 148)



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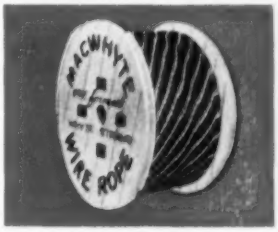

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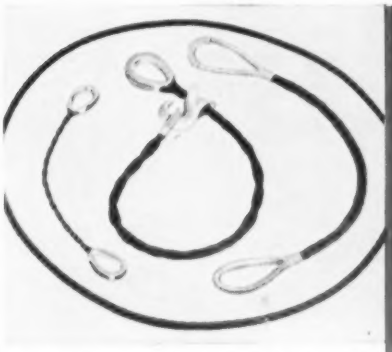

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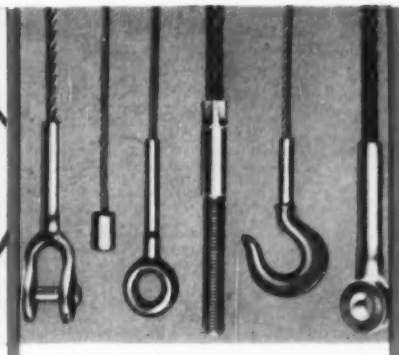

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Safety Awards Presented By National Constructors

The National Constructors Association last week presented safety awards to five of its members.

Winners for 1955 were the Rust Engineering Company, Pittsburgh; the Chemical Construction Company, New York; Koppers Company, Pittsburgh; Procon, Incorporated, Des Plains, Ill., and the M. W. Kellogg Company, New York.

The association awards are given each year to those members whose average accident frequency and severity rates are lower than the association average. Started five years ago, the NCA accident prevention program is based on voluntary participation.

Last year, the association had an average frequency rate of 16.1 and an average severity rate of 0.85. This compares with a frequency average of 17.29 and a severity average of 2.29 for construction as a whole in 1954.

NCA is composed of engineering and construction firms engaged in the building of chemical plants, petroleum refineries, steel mills and power plants.

Labor Briefs . . .

• **Colorado wage boost**—Effective last week, Colorado operating engineers and teamsters in heavy and highway construction received a flat 10-cent wage increase under a one-year contract signed by Colorado Contractors' Association, Inc. Denver scales are $2.15-$2.93 for engineers and $2.10-$2.55 for teamsters.

• **Tough Luck**—A New York court has ruled that a contractor doing state work cannot recover from the state increased wage rates he had to pay as a result of new wage determinations made after work started. That is one of the risks the contractor assumed.

• **Roofers gain**—A 25-cent wage increase has been granted to 400 roofers in San Francisco and San Mateo Counties, Calif., under a new contract with the Associated Roofing Contractors of the Bay Area Counties, Inc. Effective last week, roofers went to $3.00 an hour, enamelers and pipe wrappers to $3.25.

• **New approach**—In an effort to protect the public against inferior workmanship, union plasterers and contractors have formed a private inspection service in Coral Gables, Fla. Approved by city authorities, the service claims the support of most local contractors and plasterers.

OFFICIAL PROPOSALS

Bids: April 2, 1956

Palm Beach County, Florida

SAND TRANSFER FACILITIES AT LAKE WORTH INLET,
PALM BEACH COUNTY, FLORIDA

Sealed bids will be received by the Board of County Commissioners, Palm Beach County, Florida, at the Clerk's Office, up to and opened at 11:00 o'clock A.M., E.S.T. April 2, 1956, for construction of the following project:

SAND TRANSFER FACILITIES AT
LAKE WORTH INLET
PALM BEACH COUNTY, FLORIDA

Drawings and Specifications may be obtained by qualified contractors at the office of the County Engineer, 810 Datura Street, West Palm Beach, Florida or at the offices of Tippetts-Abbett-McCarthy-Stratton, Consulting Engineers, 62 West 47th Street, New York, New York, upon payment of $25.00 for each set; said payment will be refunded to those contractors who submit bids and who return the set in good condition to place of purchase within five days after date for receipt of bids.

The work includes the following principal features:

(1) Pumping station consisting of a permanent type dredge pump installation in a reinforced concrete building designed to withstand storm conditions and to harmonize with the surrounding area.

(2) Two submarine pipe lines across Lake Worth Inlet to carry dredged material to depleted area south of the Inlet.

(3) Flushing equipment to prevent plugging or stoppage in submarine lines.

(4) A groin of concrete capped steel sheet piles to delineate the limits of the pumping area and to protect the public.

A Proposal Guaranty in the amount of 5 per cent of the gross bid will be required as a guarantee that the bidder, if awarded the contract, will within 10 consecutive calendar days after written notice is given of such award, enter into a written contract with the Board of County Commissioners in accordance with the accepted bid, and give a Contract Surety Bond satisfactory to the Board of County Commissioners equal to 100 per cent of the Contract price.

The right is reserved to reject any or all bids.

No bidder may withdraw his bid within 40 days after the date set for opening bids.

By order of the Board of County Commissioners.

PALM BEACH COUNTY, FLORIDA
PAUL RARDIN, Chairman
STEPHEN R. MIDDLETON,
County Engineer

Bids: April 3, 1956

The Port of New York Authority

LA GUARDIA AIRPORT
DRAINAGE IMPROVEMENTS
CONTRACT LGA-270.001

Sealed proposals for the construction of drainage improvements and the furnishing and installation of utilities at La Guardia Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, April 3, 1956, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1112. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1112, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, March 8, 1956

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4648) will be received at Red Bluff, California, until April 10, 1956, for furnishing labor and materials for Earthwork and Structures, Corning Canal, Station 0+00 to Station 34+93, Sacramento Canals Unit, Central Valley Project, California. Location near Red Bluff, California. Principal items are 274,700 cu. yds. excavation; 16,500 mile cu. yds. overhaul; 160,000 cu. yds. compacting embankments; 236 lin. ft. concrete culvert pipe; and other work. Completion time 180 days. For particulars, address Bureau of Reclamation, P. O. Box 752, Red Bluff, California; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

Department of Commerce, Bureau of Public Roads, February 29, 1956. SEALED BIDS will be received at the office of the Bureau of Public Roads, Gatlinburg, Tennessee, until 1:30 p.m., E.S.T. MARCH 28, 1956, for Project 2Z1a, Blue Ridge Parkway, Swain and Jackson Counties, North Caroilna. Grading, draining, base course, and other work from Big Witch Gap, 2.533 miles westerly. The approximate quantities of the more important items are as follows: 166,800 cu. yd. Excavation, 17,500 tons Crushed Gravel or Crushed Stone and 1,800 units of 1,000 sq. ft. each of Seeding. Minimum wage rates have been fixed as required by law. Plans, specifications and proposal forms are available upon request at the office of the Division Engineer, 1440 Columbia Pike, Arlington, Virginia, or at the address gven above. H. J. Spelman, Division Engineer.

DEPARTMENT OF INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4652) will be received at Glendo, Wyoming, until April 12, 1956, for furnishing labor and materials for Alcova-Fremont 115-Kilovolt Transmission Line, Missouri River Basin Project, Wyoming. Location near Alcova, Wyoming. Principal items are furnishing and constructing 68 structures of various type; furnishing, assembling and attaching 231 insulator assemblies; 8.5 miles of line, furnishing and stringing three 636,000 circular-mil ACSR conductors; 8.5 miles of line, furnishing and stringing two 3/8-inch, galvanized-steel overhead ground wires; and other work. Completion time 90 days. For particulars, address Bureau of Reclamation, P. O. Box 127, Glendo, Wyoming; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4458) will be received at Ogden, Utah, until April 3, 1956, for furnishing labor and materials for Earthwork, Concrete Pipe Lines, and Structures and Concrete or Steel Pipe for Trunk Lines, Davis Aqueduct, Station 934/98 to Station 1144/60, Weber Basin Project, Utah. Location south of Ogden, Utah. Principal items are 101,000 cu. yds. excavation, 60,000 cu. yds. backfill; 16,560 lin. ft. furnishing and laying 60-, 48-, 33-, 24-, and 21-inch diameter noncylinder concrete pipe; 6,300 lin. ft. furnishing and laying 48-, 33-, and 21-inch diameter cylinder concrete pipe; and other work. Completion time 450 days. For particulars, address Bureau of Reclamation, P. O. Box 387, Ogden, Utah; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invtation No. DS-4653) will be received at Denver, Colorado, until April 5, 1956, for furnishing one 10-inch floating, cutter-type, hydraulic suction dredge with floating discharge line for San Acacia Settling Basin, Middle Rio Grande Project, New Mexico. Delivery is desired within 150 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver, Colorado. W. A. Dexheimer, Commissioner.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4647) will be received at Boise, Idaho, until April 11, 1956, for furnishing labor and materials for Rehabilitation of Ontario-Nyssa Pumping Plant, Owyhee Project, Oregon-Idaho. Location near Nyssa, Oregon. Principal items are diversion and care of river during construction and removal of water from foundations; 2,600 cu. yds. excavation; 575 cu. yds. concrete; 42,000 pounds furnishing and erecting structural steel for pumping plant superstructure; 75,000 pounds installing four motor-driven pumping units; 2,400 sq. ft. constructing 8-inch concrete masonry unit walls; and other work. Completion time 335 days. For particulars, address Bureau of Reclamation, P. O. Box 944, Boise, Idaho; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSALS

Bids: April 3, 1956

Power Authority of the State of New York

ST. LAWRENCE POWER PROJECT
ADVERTISEMENT FOR PROPOSALS
FOR THE
REHABILITATION OF THE
MASSENA-TAYLORVILLE
TRANSMISSION LINE, NEW YORK
SPECIFICATION NO. PA-5-14033
ST. LAWRENCE CONTRACT NO. M3

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the Rehabilitation of the Massena-Taylorville Transmission Line, New York, in the following ways:

(1) If Brought in person on the day of receiving bids, until 10:30 A.M. Eastern Standard Time on the 3rd day of April 1956, 270 Broadway, Hearing Room C on the 6th floor, New York, New York.

(2) If mailed in, until 10:15 A.M. Eastern Standard Time on the 3rd day of April 1956, at the Authority's office, 270 Broadway, Room 1300, New York 7, New York.

The proposal will be publicly opened and read aloud at the time and at the address given in (1) above.

Bids will be entertained for furnishing the equipment and services and performing the work in accordance with the bidding schedule. Completion of the work will be required on or before July 1, 1957.

Plans, specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall and Rich, 230 Congress Street, Boston 10, Massachusetts, may be inspected by prospective bidders during office hours, and may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1300, New York 7, New York, upon application and prepayment of a fee of ten ($10.00) dollars per initial set of contract documents and five ($5.00) dollars per set for additional sets, no part of which will be refunded. Two sets must be returned with each bid.

Bids must be made in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 10 percent of the gross sum bid.

The right is reserved to reject any and all bids.

W. S. CHAPIN
GENERAL MANAGER

PA-5-14033

Bids: April 11, 1956

City of Knoxville, Tennessee

NOTICE TO BIDDERS

SEALED PROPOSALS, invited by the City of Knoxville, will be received by the Director of Public Service in the City Council Chamber, City Hall Park, Knoxville, Tennessee, until 10:00 A.M. E.S.T. April 11, 1956, at which time they will be opened and publicly read aloud. And the contract awarded as soon thereafter as practicable for the construction of the Riverfront-Willow Avenue Redevelopment Project, Division "A", flood control works and sanitary sewer readjustments.

The following unit quantities are involved in the flood control works: 49000 cu. yds. of earth excavation, 31600 cu. yds. of rock excavation, 643,000 sta. yds. of surplus disposal, 3500 cu. yds. of compacted embankment, 3240 cu. yds. of pervious fill, 6975 cu. yds. of Class "A" structural concrete, 4585 cu. yds. of Class "B" structural concrete, 200 cu. yds. of Class "C" structural concrete, 2,240,000 lbs. of concrete reinforcing steel, 26,200 lbs. of welded wire fabric and 5150 lineal feet of 6" perforated drain pipe.

The following unit quantities are involved in the sanitary sewer readjustments: 2350 lineal feet of 48" pipe, 367 lineal feet of 27" pipe, 12 sewer manholes, 4050 cu. yds. of rock excavation and one sewer crossing under channel.

Four hundred and fifty calendar days will be allowed for this construction.

The Instructions to Bidders, proposal, specifications and plans may be examined at the office of the City Engineer, City Hall, Knoxville, Tennessee. Copies of these contract documents may be obtained upon the deposit of twenty-five dollars ($25.00) for any set. Any bidder, upon returning such set promptly and in good condition, will be refunded his deposit, and any non-bidder, upon so returning such set, will be refunded one-half of his deposit.

Each proposal must be accompanied by a satisfactory cashiers or certified check or bid bond, made payable to the City of Knoxville, in the amount of five per cent (5%) of the total bid, as assurance that the bid is made in good faith.

All bidders must be licensed contractors, as required by Chapter 135 of the Public Acts of 1945, as subsequently amended by the General Assembly of the State of Tennessee.

Attention is called to Section 9 of the Rules and Bylaws adopted April 27, 1945 by the State Board of Licensing General Contractors, Nashville, Tennessee, which reads in part as follows:

"The architect or engineer shall direct that the number and date of license appear on the envelope containing the bid, otherwise the bid will not be opened."

The City of Knoxville reserves the right to waive any informalities in or to reject any or all bids and to accept the bid which it deems most favorable to the interest of the City, after all bids have been examined and canvassed.

CITY OF KNOXVILLE
(Signed) R. I. Gentry
Director of Public Service

Date: February 24, 1956
Knoxville, Tennessee

Bids: March 27, 1956

Power Authority of the State of New York

ST. LAWRENCE POWER PROJECT
ADVERTISEMENT FOR PROPOSALS
FOR
THE FURNISHING AND DELIVERY OF
LOAD CENTER UNIT SUBSTATIONS
AND APPURTENANCES
SPECIFICATIONS NO. PA-5-14008
ST. LAWRENCE CONTRACT NO. P36

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the design, manufacture and furnishing of seventeen (17) load center unit substations and delivery thereof f. o. b. destinations, in the following ways:

(1) If brought in person on the day of receiving bids, until 10:30 A.M., Eastern Standard Time on the 27th day of March, 1956, Hearing Room C on the 6th floor, 270 Broadway, New York, New York.

(2) If mailed in, until 10:30 A.M. Eastern Standard Time on the 27th day of March, 1956, at the Authority's office, 270 Broadway, Room 1300, New York 7, New York.

The proposals will be publicly opened and read aloud at the time and at the address given in (1) above. Bids will be entertained for the seventeen (17) load center unit substations and associated equipment and services in accordance with the bidding schedule. Erection at the site of installation will be done by Others but services of an erecting engineer shall be provided by the manufacturer if and when required. Delivery of the equipment will be required starting June 1, 1956.

Plans, Specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and the Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario, may be inspected by prospective bidders during office hours, and may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1300, New York 7, New York upon application and prepayment of a fee of Ten ($10.00) dollars per initial set of contract documents and Five ($5.00) dollars per set for additional sets, no part of which will be refunded. Two sets must be returned with each bid.

Bids will not be restricted to American manufacturers.

Bids must be made in duplicate upon the proposal forms included in and bound with the Contract Documents. A bid deposit will be required with each bid in an amount not less than 10 percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

PA-5-14008

Bids: April 2, 1956

Construction of Storm Sewers

NOTICE TO BIDDERS

Sealed bids for furnishing all materials and labor for the construction of Storm Sewers in the Glenwood Terrace Section of South River, N. J. will be received by the Borough Council of the Borough of South River, N. J. on Monday, April 2, 1956 at 8:30 P.M. Eastern Standard Time at the Borough Hall on Main Street in said Borough.

Bids will be received up to the time above stated and opened in public and read, the award if made will be made as soon as practicable thereafter.

The approximate quantities of material and labor are as follows:—

1. 90 Lin. ft. 42" R.C. Pipe
2. 1105 Lin. ft. 36" R.C. Pipe
3. 150 Lin. ft. 27" R.C. Pipe
4. 1545 Lin. ft. 24" R.C. Pipe
5. 570 Lin. ft. 18" R.C. Pipe
6. 235 Lin. ft. 15" R.C. Pipe
7. 965 Lin. ft. 12" R.C. Pipe
8. 567 Lin. ft. 12" Porouswall Pipe
9. 200 Cu. yds. Washed Gravel
10. 4 tons Salt Hay
11. 20 Catchbasins
12. 15 Manholes
13. 4 Cu. yds. Concrete Structures
14. 450 pounds Steel
15. 100 Lin. ft. Curbing replaced
16. 1000 Sq. yds. Pavement
17. 20 Water services to houses
18. 400 Lin. ft. 6" Water Main moved
19. 200 Lin. ft. House Sewer connections relaid

Bids shall be made in writing on the forms included with the plans and specifications prepared by Robert J. Baier, Borough Engineer, 79 North Main Street, Milltown, New Jersey, where they may be seen during regular business hours and obtained by prospective Bidders upon proper notice and payment of twenty-five (25) dollars for each set. The deposit will be returned to contractors who return the plans and specifications in good condition within ten (10) days after opening of bids.

Bidders are notified that under Chapter 180 of the Laws of 1926, State of New Jersey they will be required to furnish a standard form of Questionnaire and financial statement containing a complete statement of the bidders ability, financial standing and experience in performing work of the type contemplated, before such bidder can be furnished plans and specifications.

The Borough, through its Engineer, may refuse to furnish such bidder, whose statement is unsatisfactory, with plans and specifications.

Each bid must be enclosed in a sealed envelope with the bidder's name and address on the outside and addressed to the Mayor and Council of the Borough of South River, Middlesex County, New Jersey and be accompanied with a certified check in an amount of not less than ten (10) per cent of the amount bid, but need not be in excess of ten thousand (10,000.00) Dollars.

The Borough Council reserves the right to accept or reject any or all bids and to accept the proposal deemed to be in the best interests of the Borough.

By order of the Borough Council
Signed George A. Bowen
Borough Clerk

EMPLOYMENT OPPORTUNITIES

The Advertisements in this section include all employment opportunities—executive, management, technical, selling, office, skilled, manual, etc.

Positions Vacant
Positions Wanted
Part Time Work

Civil Service Opportunities
Selling Opportunities Wanted
Selling Opportunities Offered

Employment Agencies
Employment Services
Labor Bureaus

DISPLAYED

The advertising rate is $28.25 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

An advertising inch is measured ⅞" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

——RATES——

UNDISPLAYED

$2.10 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Box Numbers—counts as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to Agency Commission.

Send NEW ADS to ENGINEERING NEWS-RECORD, 330 W. 42nd St., N. Y. 36, N. Y. for March 22nd issue closing March 12th

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

Gunite Superintendent and Nozzleman wanted wanted immediately. Steady work. State age, experience, availability, salary desired. Vicinity Washington, D. C. P-9445, Engineering News-Record.

Instrument Man—Graduate civil engineer with several years lay-out experience in heavy construction work. Permanent position in western Pennsylvania. Unusual opportunity. P-9444, Engineering News-Record.

Superintendent—Complete knowledge of road construction and bituminous paving. Must be able to estimate and take charge of complete road job. Year round position with reliable construction company in Central New York. P-9400, Engineering News-Record.

Foreman—Complete knowledge and experience in all types of bituminous paving for position with reliable road construction company in Central New York. P-9404, Engineering News-Record.

Civil Engineering teachers in fields of structures, hydraulics, and highways. Newly formed department in University in Midwest. Salary and rank open. P-9352, Engineering News-Record, 520 N. Michigan Avenue, Chicago 11, Illinois.

Wanted: Engineer with at least five years' experience in sewage water line construction, with some supervisors background. Opportunity for permanent connection with long established contracting firm. Please state qualifications, references, experience and salary wanted. Write to La Fera Contracting Co., 149 Verona Avenue, Newark 4, New Jersey, or phone HUmboldt 3-8341 between 10 A.M. and Noon.

Civil Engineers, Designers, Draftsmen experienced in the design of sewers, pumping stations, sewage treatment plants, water supply systems, structural and hydraulic design, hydraulic computations, specs. O'Brien & Gere, 400 E. Genesee St., Syracuse, N. Y.

Construction Superintendent—Wanted experienced man that is capable of taking charge of and building medium sized water plants, sewage plants, and pumping stations. P-9416, Engineering News-Record.

Chief of Party—Must be capable of handling survey parties and have thorough understanding of survey work pertaining to rights of way, curb and street lines, sanitary and storm sewer surveys, and general survey work. Apply by appointment—Office of Howard Madison, Township Engineer, 1 Main Street, Woodbridge, N. J., between 9 A.M. and 5 P.M.

Transit Man—For inside and outside work. Must have thorough knowledge of engineering, drafting and calculating, and be thoroughly familiar with deed and conveyance, and tax map work. Apply by appointment—Office of Howard Madison, Township Engineer, 1 Main Street, Woodbridge, N. J., between 9 A.M. and 5 P.M.

Structural designers and draftsmen with at least two years recent experience in engineer's office. Miami location with good opportunities. Give complete information and salary desired. P-9192, Engineering News-Record.

Construction Superintendent: Good layout man with some experience in surveying. Prefer men with sewer and sewage treatment construction background, however an experienced all-around supervisor will be considered. Excellent working conditions and good pay for a qualified man. Contact Mr. L. Mozzone, 118 Kendall Ct., Dover, N. J.

POSITIONS VACANT

Engineering graduates with experience in the testing and control of placement of soils, concrete and asphalt mixtures for work immediately abroad and in New England for an engineering organization of sixty years in business. Give full details of experience and education. Salary range $5,000 to $10,000 per year. P-9305, Engineering News-Record.

Wanted: Bridge & Highway designers with office and field experience by consulting engineering firm in Pennsylvania. Give complete details and salary desired. P-8381, Engineering News-Record.

Project Engineer design and construction hy-droelectric plant West Pakistan salary 15,000 plus 3,000 living allowance. Justin & Courtney, 121 S. Broad Street, Philadelphia 7, Pa.

Asphalt paving foreman, young, able to assume responsibilities. Salary based on experience, highway department background helpful. Northern New Jersey. P-9292, Engineering News-Record.

Wanted: Experienced highway and structural engineers for work on expressway design with N. Y. C. consulting engineers. P-9185, Engineering News-Record.

Engineers experienced in design and super-vision of construction to work as resident engineers or prepare plans for water and sewer systems. State experience, age, salary required, when can report, and give references. Reply P-9290, Engineering News-Record.

City Engineer's Assistant—For general mu-nicipal engineering and administration, salary dependent upon qualifications, state experiences and apply to Service Director, City Building, Mansfield, Ohio.

Old Established firm wants engineer & esti-mator for diversified general construction; schools, airports, sewage disposals. Must be able to take charge in field and do estimating work. Age 30-45. Must be top man. Permanent position. Salary open. Reply P. O. Box 430, Warren, Ohio.

Cost Engineer—Thoroughly experienced in heavy construction. Engineering degree preferred. Opportunity for permanent connection with long established world-wide construction firm with headquarters in New York City. Please furnish detailed experience record and salary desired. P-9509, Engineering News-Record.

Wanted: Experienced building construction estimator for general contractor located in Southern Connecticut. Excellent opportunity for qualified person. P-9485, Engineering News-Record.

Wanted for immediate employment. Archi-tects and owners field representative for large monumental building being constructed in Buffalo, New York. Applicant is required to have experience in general construction, plumbing, heating, ventilating, air conditioning and electrical work for the purpose of interpreting plans and specifications, inspection and coordination of such work. Please state qualifications, references, experience and salary wanted. P-9519, Engineering News-Record.

Engineers experienced in water and sewage works projects or related fields. Opportunity for permanent connection with long established consulting firm. Please state full qualifications, experience, references and salary requirements. Location Ohio. P-9548, Engineering News-Record.

Construction Superintendent—Experienced in concrete building construction. Work in New York State. Must be able to assume complete responsibility. Engineering background preferred. Start immediately. P-9552, Engineering News-Record.

POSITIONS VACANT

Wanted by progressive company young engi-neer for structural and plate work who can qualify for license in North Carolina. P-9553, Engineering News-Record.

City Engineer Wanted. Registered; by City of 7000 population. State qualifications, salary expected and full particulars in letter to City Clerk, Vernon L. Peterson, International Falls, Minnesota.

Construction Superintendent. Heavy, marine and industrial. Southeastern states. Must be capable of organizing and scheduling operations and cost conscious. Submit pertinent information as to education, age, and experience and furnish references. Indicate present or last salary. P-9559, Engineering News-Record.

Designers & Draftsmen—structural, mechani-cal & electrical. For work on industrial buildings & power plants. Long range program, top salaries, advancement & vacations. Marbarry Corp., 140 Nassau St., N.Y.C. COrtlandt 7-0322.

Wanted: Highway and structural draftsmen for work on expressways with N.Y.C. consulting engineers. Recent graduates considered. P-9188, Engineering News-Record.

Registered Architect, potential income of $15,000 annually. Opportunity for young man age 30 to 35 to assume responsible position with young, growing construction and development firm in Eastern Penna. Will entail use of abilities in designing and delineating shopping centers, commercial and light manufacturing developments, consultation with clients and directing preparation of working drawings. Starting salary $150 weekly with increases according to ability, plus bonus arrangement. Automobile and expenses provided. Moving expenses will be assumed by us. Replies held in strict confidence. Personnel of our organization has been informed of this advertisement. Send resume to P-9567, Engineering News-Record.

EMPLOYMENT AGENCIES

Wanted Engineers, Designers, Draftsmen-Structural, Architectural, M.E., C.E., E.E. and Ind., also Teachers and Chemists. Cleveland Engineering Agency, 2132 E. 9, Cleveland.

POSITIONS WANTED

Chief Estimator, project manager, construc-tion executive, available for association with active, competitive general contractor. Proven profitable record for 15 years. Salary bracket $15,000 per year. PW-8855, Engineering News-Record.

Engineer age 37. Diversified experienced in-cludes field engineering, cost estimating, chief engineer, construction superintendent. Familiar with power equipment. 5 years foreign service—resident engineer, branch manager. Available April. Prefers research & development work in the eastern States. PW-9169, Engineering News-Record.

Construction Engineer—B.S. in C.E. married; extensive industrial and commercial experience; 5 years as Supt. Young, aggressive and ambitious. Desires responsible position with growing firm. Domestic or foreign. PW-9430, Engineering News-Record.

Construction "Pro" loyal, dependable pro-ducer for your management team. Technical graduate, broad industrial and mining experience. Knows estimating, has flair for selling and negotiating. PW-9407, Engineering News-Record.

B.S.C.E.—Reg.—7 years experience in the supervision of inspection, surveying and design of highways, turnpikes and buildings. PW-9497, Engineering News-Record.

(Continued on opposite page)

POSITIONS WANTED
(Continued from opposite page)

Treasurer Controller—Over twelve years senior administrant of consulting engineering and construction contracting acctg. high level experience includes financing, insurance, job costs, taxes & claims. Proficient in the preparation of concise reports. Prefer New York City area. PW-9410, Engineering News-Record.

Architects Inspector or superintendent. Presently on $2.5 million job. Location in south or west preferred, or overseas. Degree in Building trades. Minimum $8000. Available March 15, 1956. PW-9494, Engineering News-Record.

Heating and air conditioning engineer, P.E., 8 years experience with architect-engineering firms and consulting engineering firm, seeks more responsibility and advancement. PW-9491, Engineering News-Record.

Construction Engineer 25 years sound experience on heavy industrial, power, chemical, government projects. Organized and supervised administrative and field forces. Familiar all types contracts. Top man, want salary to match. Prefer Southwest. PW-9490, Engineering News-Record.

Building Construction Engineer experienced hospitals, banks, office buildings new and alterations estimates, coordinates sub-contractors tractors, manages office. PW-9511, Engineering News-Record.

Sanitary, civil engineer, grad. reg. wants to become associated with engineering or architect firm in Northwest, full or part-time basis. 20 years experience. PW-9508, Engineering News-Record.

Registered Sanitary engineer with several years diversified experience in water; sewage; industrial and nuclear wastes; industrial hygiene; air pollution; environmental surveys; wants to associate with small progressive engineering firm. PW-9507, Engineering News-Record.

Sales Engineering. Applicant 31 years old, married and now in military service. B.S. Degree from U. S. Naval Academy and B.C.E. and M.C.E. degree from Rensselaer Polytechnic Institute. Broad public works and contract supervisory experience; excellent administrator. Desire position with good opportunities for advancement. Available about 15 July 1956. PW-9499, Engineering News-Record.

Executive Civil Engineer, project manager, over 20 years field and office experience estimating, bid to completion, all types earthwork construction; dams, excavation, dredging. Thoroughly competent to assume full responsibility, domestic or foreign. Write PW-9518, Engineering News-Record.

Graduate Engineer, nine years mechanical construction and plant engineering. Industrial and some chemical. Piping, process, and power. Presently Supt. of construction. Project near completion. Location immaterial. PW-9524, Engineering News-Record.

Lt (jg), Civil Engineer Corps, USNR, age 26, available April, desires permanent position with contractor or consultant in middle Atlantic area initially as field engineer. Opportunity for advancement to executive, administrative position essential. PW-9551, Engineering News-Record.

Construction Superintendent: Industrial & commercial bldgs., institutional, large scale housing, churches, etc. Over 25 years experience, desires position with reliable organization. Prefer near New Jersey. PW-9560, Engineering News-Record.

Construction Engineer, BSCE, 10 years heavy industrial & hydro exp., seeks responsible, active position with US contractor or consultant in Europe. Cleared by AEC & ICA. Completing European assignment; desire transfer, with family; in June. PW-9571, Engineering News-Record.

Construction Engineer, 8 years diversified experience, 6 years overseas. Graduate civil engineer, knowledge Spanish, 29, single, veteran. Desires foreign position. PW-9572, Engineering News-Record.

SELLING OPPORTUNITIES WANTED

Agent, specialized in materials for construction and public works in France, visiting United States from March 5th to March 28th, wishes to obtain exclusive agencies for related materials. Please write to A. Laffaye, RA-9515, Engineering News-Record.

One of Ohio's oldest supply yards wants manufacturers representative lines. We are registered engineers. We would welcome the following accounts: reinforcing steel, metal forms, wholesale lumber, metal windows, or other allied lines pertaining to the construction industry. Write or wire Rinderkneet, P. O. Box 36, West Carrollton, Ohio.

Due to our expansion program, the following permanent positions are available in a large pulp and paper manufacturing plant in the Upper Midwest:

Design and Construction Estimator
Instrumentation Engineer
Piping Design and Layout Engineer
Heating and Ventilating Engineer

The individuals being sought should be graduate engineers with a minimum of five to ten years experience who are well versed in their respective fields. Our employees know of these openings. Your confidential reply should include personal, educational and work history together with salary thinking. Write

P-9199, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

ENGINEERING OPPORTUNITIES

For highway engineers and young graduate Civil Engineers interested in future as highway design engineers. Training under competent highway specialists in expanding well-established firm.

Two or more years highway experience preferred but not required.

Excellent starting salaries, moving allowance, Blue Cross, paid vacations and holidays, sick leaves, voluntary employee benefit and retirement plan.

Write for application form

SVERDRUP & PARCEL ENGINEERING CO.
1134 Locust St. St. Louis 1, Mo.

CIVIL ENGINEERS
SENIOR—JUNIOR

College graduates—by established Public Utility supervisory-consulting organization. SENIOR—minimum 7 years experience—JUNIOR—minimum 3 years, for work in connection with design hydro systems, also structural and foundations for steam, hydro, and Diesel Plants. Location New York—some travel future. Reply stating age, education, experience, personal particulars and minimum salary expected.

AMERICAN & FOREIGN POWER COMPANY INC.
AND SUBSIDIARIES
2 Rector Street New York 6, New York
21st Floor

ENGINEERS
Designers Detailers Draftsmen for work on
Bridges, Expressways, Turnpikes

PERMANENT POSITIONS DEPENDING ON EXPERIENCE AND ABILITY
PAID VACATION, SICK LEAVE HOSPITALIZATION, LIFE INSURANCE
INCLUDE EDUCATION, EXPERIENCE, REFERENCES AND SALARY EXPECTED IN APPLICATION LETTER

Howard, Needles, Tammen & Bergendoff
1805 GRAND AVE. KANSAS CITY 8, MO.

DESIGN ENGINEER

Degree in Mechanical Engineering. Should be capable of handling structural and thermal calculations. Work involves design of automotive and truck-trailer body components in General Engineering Department of leading manufacturer. Salary commensurate with experience. Opportunity for alert individual in growing industry.

P-9529, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

SENIOR STRUCTURAL ENGINEERS
Also Mechanical Draftsmen for Plumbing, Heating and Ventilating

To work in our Bridgeport, Conn. Office

Reply directly to

FLETCHER-THOMPSON, INC.
211 State St. Bridgeport, Conn.

CIVIL ENGINEER

Affiliate of Standard Oil Company (N. J.) in South America requires man with engineering degree and several years oil field experience in swampy areas where barge drilling and dredging operations are carried out. Project involves design of foundations, drilling barge, bridges, roads, camps and other related construction.

Write giving age, education, marital status and complete details of experience.

Box 308-H
Radio City Station
New York 19, N. Y.

STRUCTURAL
or
ARCHITECTURAL ENGINEER

Position will involve responsibility of administration and technical direction of approximately 10 Draftsmen. The qualified man should have at least 10 years experience as a Structural Draftsman or Designer and background in supervision of structural or architectural Draftsmen. Permanent employment with top pay, paid vacations, group insurance plan, pension plan. Excellent opportunity with a nationally known long established sheet metal building products fabricator located in the Mid-West.

For a travel expenses paid interview, submit a detailed resume of experience, education, age and salary requirements to:

P-9543, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

ARCHITECTURAL FIELD ENGINEER

Degree in Architectural or Civil Engineering desirable with at least 5 years of architectural field experience. Should include some supervision of installation of metal windows and curtain walls. Age 30 to 45. Salary attractive.

P-9530, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

STRUCTURAL STEEL DETAILERS AND CHECKERS

Top rates for exp. men, long program, overtime, vacation, holidays.

SAMUEL LICHTENBERG
STRUCTURAL ENGINEER
113 West 42nd St. New York 36, N. Y.

CIVIL ENGINEERS

Work and live in wonderful WISCONSIN

A rapidly expanding highway program offers:

Permanent civil service positions
Rapid advancement
Challenging work

Starting salary based on experience

Civil engineering degree or professional registration required.

Write to:

Personnel Officer
State Highway Commission of Wisconsin
State Office Building
Madison 2, Wisconsin

SOUTH AMERICAN POSITIONS VACANT

INDUSTRIAL ENGINEER—with experience as supervisor, materials handling, wage and salary administration

GENERAL CONSTRUCTION FOREMAN in responsible charge Construction Division, Mechanical Department

MECHANICAL DESIGN ENGINEER for promotion of studies, designs and details involving specialized mining and machinery, etc.

DESIGN ENGINEER for structural-architectural designing and detailing

FIELD ELECTRICAL ENGINEER to supervise work done by District Electrical Foremen in various Company-owned villages, Mine, Concentrator, Smelter and miscellaneous jobs, which include all electrical equipment used in the Plant with its auxiliary services and covers power distribution and utilization

FIELD ENGINEER for design drafting in connection with Smelter maintenance and repairs, camp buildings, water line, etc.

ASSISTANT MINE MASTER MECHANIC

ASSISTANT MINE FOREMEN & ASSISTANT MINE ENGINEERS

ASSISTANT MILL METALLURGISTS & JUNIOR MILL METALLURGISTS for Mill Metallurgical Department

Excellent opportunities. Large Copper Company Chile, South America. 3-year contract. Transportation both ways and salary while traveling paid by Company. Low cost of living, rent and taxes. In reply give complete details.

P-9542, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

ENGINEERS

STRUCTURAL
HIGHWAY
ELECTRICAL
DRAINAGE

for work on

Bridges, Expressways, Turnpikes

PERMANENT POSITIONS DEPENDING ON EXPERIENCE AND ABILITY

PAID VACATION, SICK LEAVE HOSPITALIZATION, LIFE INSURANCE

INCLUDE EDUCATION, EXPERIENCE, REFERENCES AND SALARY EXPECTED IN APPLICATION LETTER

Howard, Needles, Tammen & Bergendoff
55 Liberty St. **New York 5, N. Y.**

ENGINEERS

HIGHWAYS AND BRIDGES

Designers
Draftsmen

OPENINGS At
Rochester, Penna., Harrisburg, Penna., College Park, Md.

ARCHITECTS

Architectural Draftsmen

OPENINGS At
Rochester, Penna.

Send Resume Including Education, Experience, Salary Requirements and Availability TO:

Richard L. Shaw, *Personnel Director*

Michael Baker, Jr., Inc.
Consulting Engineers
Baker Building **Rochester, Penna.**

FIELD ENGINEER WANTED

Preferably civil engineering graduate with several years field experience by large heavy construction contractor to lay-out work, make simple estimates and assist superintendent. Permanent position, location Maryland. Excellent opportunity for ambitious man as several of our executives have started with us in similar positions. Please state age, education, short experience outline, and salary wanted.

P-9949, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

HEAVY CONSTRUCTION ESTIMATORS

Major southwestern general contractor expanding heavy construction department. Need estimators with experience and ability to investigate, take-off, and price wide variety of heavy construction type work. Excellent opportunity for young men to obtain desirable position with established firm. Reply indicating experience, education, age and availability in first correspondence to

P-9384, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

CHIEF ENGINEERS

Electrical & Mechanical

for Supervision of Construction in Labrador and Newfoundland

Please send complete resume of education and experience

METCALF & EDDY
Statler Bldg. **Boston 16, Mass.**

STRUCTURAL ENGINEER

Licensed. Must have ability to design reinforced concrete and structural steel in all details, on medium to multi-story buildings. Top rate and future for qualified man. Incentive, Retirement, Stock Purchase Plan. Age open. Relocate St. Louis. Replies confidential.

Personnel Division

Bank Building & Equipment Corp. *of America*

906 Sidney St. **St. Louis 4, Mo.**

SALES ENGINEERS

A major steel company has need for sales engineers to promote and sell fabricated products in middle Atlantic states. Excellent opportunities for men 25 to 30 years old with engineering background and a desire for sales work. Attractive starting salary with company car, expenses and bonus plan.

P-8324, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

EXCEPTIONAL SALES OPPORTUNITY

We have territories open for Sales Representatives on proved outstanding new product for sale direct to building material and equipment dealers. Top commission.

FORM-KOTE, INC.
700 West Virginia Street
Milwaukee 4, Wisconsin

Architectural Draftsmen

To develop complete working drawings from sketches. Fluent in detail designing. Knowledge of commercial work required. Should have minimum of 5 years experience in architectural office. Permanent. Excellent salary and company provided advantages. Write complete background including salary desired and availability. All replies will be answered.

DESIGN, INCORPORATED
906 Sidney St. **St. Louis 4, Mo.**

BECHTEL

ENGINEERS & DESIGNERS

MECHANICAL —
Design experience in one or more of the following fields:
Instrumentation and controls for Industrial Equipment, Refinery and Chemical Plant Processes, Steam Power Plants, Materials Handling Equipment, Metallurgical Process Equipment such as metallurgical furnaces, kilns, crushers, or related heavy machinery, heating and ventilating, or industrial plant layout.

ELECTRICAL —
Responsible design experience on panel boards, industrial controls, power distribution or lighting.

STRUCTURAL —
Design or detailing experience in structural steel and/or re-inforced concrete for industrial projects.

CIVIL —
Design experience in one or more of the following fields: Site layout, roads, railroad, drainage, or hydro-electric project.

PIPING —
Designers with drafting and layout on high temperature high pressure piping.

Immediate openings in our SAN FRANCISCO offices for men with above stated job experience.

BECHTEL CORP. is a progressive engineering and construction firm engaged in world-wide operations.

LIBERAL RELOCATION ALLOWANCES COVERING APPLICANTS, FAMILY & HOUSEHOLD EFFECTS

BECHTEL

Engineers - Constructors

Send Resume:
5 West 45th St. New York 17, N. Y.
220 Bush St., San Francisco, Calif.

Confidential interviews can also be obtained at: Scanlon Building, Houston, Texas, or Roosevelt Building, Los Angeles, Calif.

Barber-Greene has opportunities for ENGINEERS

Openings include design, development, field engineering and sales opportunities in conveying, ditching, and asphalt equipment fields.

Opportunities for both experienced and inexperienced mechanical and civil engineering graduates.

Training program available to supplement technical background and experience.

Barber-Greene is one of the outstanding growth companies, which offers lifetime careers to outstanding men.

Submit resume outlining background, salary desired, etc., to: Personnel Manager

Barber-Greene
AURORA, ILLINOIS

ENGINEERS
DESIGNERS
DRAFTSMEN

WE ARE — A distinguished international company pioneering in all phases of new industrial design and construction, including Atomic Energy. A company with limitless future in the new age we are helping to create by a fast moving, really professional team of

ENGINEERS

WE WANT — Qualified electrical, structural, mechanical, architectural, designers and engineers for our New York, Cleveland, and Cincinnati, Ohio offices.

WE OFFER — Excellent salaries, all fringe benefits, good working conditions, 48 hour work week, high management cooperation and above all, magnificent advancement opportunities for career minded

ENGINEERS

Engineers who wish to investigate these opportunities should submit a resume stating their education, experience and salary requirements to:

THE H. K. FERGUSON COMPANY
ENGINEERS AND BUILDERS
1783 East 11th Street — Cleveland 14, Ohio

ENGINEERS
Designers - Detailers - Tracers
for work on
Bridges, Expressways, Turnpikes

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Degree in Mechanical, Civil, or Architecture. Should have experience in design of curtain wall spandrel panels and architectural windows. Involves work with architects and shop design development. Leading company. Salary attractive with excellent opportunity.

P-9531, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

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Central Engineering Department of FMC Chemical Divisions has opening in New York City for an engineer with substantial chemical plant construction cost experience. Duties will include the preparation of cost estimates and the analysis and control of job costs.

Technical Personnel Manager
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FOOD MACHINERY AND CHEMICAL CORP.
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PIPING LAYOUT, STRUCTURAL STEEL, CONCRETE, PROCESS HEATERS, EQUIPMENT SPECIFICATIONS, LAYOUT AND PROCESS DESIGN. ALSO PIPING AND ELECTRICAL DRAFTSMEN.

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(Classified Advertising)

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A Bruning BW Printer model #4, including a #149 BW developing machine, and a #149-S stand. Perfect condition. $150.00. FS-9554, Engineering News-Record.

WANTED

Wanted: Small complete Gurley transit, top opening leather case or buff, usable. W-9570, Engineering News-Record.

Engineers—Foremen—Office Men

Learn latest methods to organize and run work. Prepare for the top jobs.

Send post card for details.

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Backhoe & Shovel Attachments
Marion 43M
E. J. BUTTON & SONS
Chittenango, New York
Phone 3282

WANTED
LONGITUDINAL FINISHER
for concrete pavement. 10" forms.
W-9523, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

FOR SALE
2 USED BARBER-GREENE FINISHING MACHINES
Can be seen at following address:
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1337 South Kingshighway Boulevard,
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ARCHITECTURAL ENGINEERING
OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty-third year.
WILSON *Engineering Corp*
College House Offices HARVARD SQ. CAMBRIDGE MASS.

ALLIS-CHALMERS MODEL HD-20
1953 TRACTOR

Serial No. 3596, powered by a General Motors diesel engine. Cable operated bulldozer blade, double drum PTU. Completely rebuilt. Price FOB present location: $12,500.00.

The Jaeger-Lembo Machine Corp.
Northern Blvd., at 127 Street
Flushing 52, N. Y., Hickory 6-8800

AVAILABLE FOR IMMEDIATE SHIPMENT

Marion current Model 93M—2½ cubic yard dragline machine without dragline bucket, Serial Number 9280. Sold new in 1949. 42" wide 20 ft. long crawlers. 70 feet dragline boom. Cat. D-17000 engine. 2000 Watt Kohler light plant. Good operating condition and presents first class appearance. Located in Richmond on a railroad siding. Can be demonstrated to interested party. Priced less than half of a new machine.

RISH EQUIPMENT COMPANY
1601 Chamberlayne Ave. Richmond, Va.
Phone 3-3538

FOR SALE—IMMEDIATE DELIVERY

1—Model 20 Clyde Electric Gantry Crane—like new
1—Steel Barge 257' x 41' x 9'
3—600' Chicago-Pneumatic Portable Diesel Compressors with D17000 Caterpillar Diesel Engines
1—60" x 16' A.S.M.E. Air Receiver—New
1—Packard Ambulance complete with Equipment suitable for Construction job or Industrial—good rubber

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LOCOMOTIVE CRANES—Brownhoist, Ohio, Orton New 1940-1945. 25, 30 & 40 Ton.
DIESEL LOCOMOTIVES—25, 35, 55 & 60 Ton. All in excellent condition. No reasonable offer refused.
BOILERS—Package Type 100-200, 300-500 H.P.
AMES—B&W Etc.
EVEREADY SUPPLY CO.
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EDison 4-9471

3 P & H Cranes #255
Recent Models, practically new, with long booms
FS-9474, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

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CRAWLERS — Capacities to 60 tons, Booms to 180 ft.
TRUCK CRANES — Capacities to 35 tons, Booms to 130 ft.

P and H, Lima and Manitowoc.
Top-Condition erection cranes

ROGER SHERMAN
CRANE SERVICE, INC.
East Hartford, Connecticut JAckson 8-4106

FOR SALE

1—Northwest Crawler Crane Model No. 95. Serial No. 12527. Powered by Murphy Diesel Model MEC. 100-foot boom. Excellent condition. Price $32,000.00. (Optional: with rear platform to house pile driving equipment, and $1,000.00).
1—P. & H. Model 855 Crawler Shovel Crane. Serial No. 10984. Powered by GM 671 Diesel. Equipped with shovel front and 90-foot boom. Excellent condition. Price $28,000.00
1—Shovel front for P. & H. Model 855-A.
1—Shovel front for P. & H. Model 855-B.
2—Shovel fronts for Bay City Model 65.
2—Shovel fronts for Lorain Model 41.
32,000 sq. ft. Atlas Speed Concrete Forms.
1—Jersey (macadam sub-base) Stone Spreader.
1—McKiernan-Terry S-5 Steam Hammer.
1—McKiernan-Terry 10 B-3 Steam Hammer.
2—Sets 100 ft. steel pile driving leads.
All of the above equipment is in excellent condition and immediately available.

E. & E. J. PFOTZER
P. O. Box 126 Wilmington, Delaware

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5 DW21 Motor Scrapers. All 8W serial nos., mtd. on excellent rubber. From	$22,500.00
1 Model C Tournapull, s/n GT6023CTVSP	22,500.00
2 Caterpillar D6 Dozers s/n 9U3556	7,500.00
s/n 9U19004 w/blade	12,000.00
1 Caterpillar D8 Dozer w/DDPU s/n 13A11298P	21,500.00
1 Caterpillar D8 Torque Converter Pusher w/DDPU, s/n 13A2085	25,000.00
1 HD 20 Dozer, s/n 5799	22,000.00
1 International TD24 Dozer (torque converter) s/n TDE 6132	23,000.00
1 Caterpillar Grader, s/n 8T2681	12,000.00

This equipment may be seen by appointment. Terms may be arranged.

BRESLIN CONSTRUCTION CO.
1433 S. Preston St. Louisville 17, Ky.
Melrose 6-1326

Link Belt, Model TC-70
¾ CU. YD. CRANE

Upper structure powered by a SRKR Waukesha gasoline engine. Serial No. 663380, with a 30' clamshell boom, no bucket. Mounted on a White 6x6 reconditioned truck, with a Hercules gas engine, tandem axle drive. 10:00x22 tires. Serial No. 250388. Good running condition. Price: $14,500.00

The Jaeger-Lembo Machine Corp.
Northern Blvd., at 127 Street
Flushing 52, N. Y., Hickory 6-8800

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1951 Littleford, 101 on 1951 2 ton 2 speed Chevrolet truck, 1000 gallon tank, circulating shifting spray bar, 24 H.P. engine. Very good shape. Call: DI. 1-7712 days or SK. 2-0215 evenings

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Blaw Knox Mixing & Batching Plant, 900 yd. capacity. Two 2 yd mixers.
200 ton American Guy Derrick 160' Bm.
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25 ton Ohio Diesel Loco Crane new 1947.
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50 ton Whitcomb Diesel Elec. Loco. 1943.
2½ yd Manitowoc 3500 Diesel Crane.
60 ton American R-25 Elec. Revolver.
10 ton Unit Mobile Crane Model 1020 12 Tires. New 1946.

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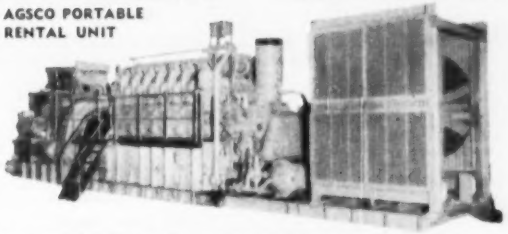
125 KVA to 1420 KVA RENTAL or PURCHASE



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Unit Model 1020A
TRENCHOE

1955, powered by a General Motors diesel Model 451 engine with torque converter. Serial No. 55140. Engine No. 4C-3268. Used 5 months. Price: $17,500.00.

The Jaeger-Lembo Machine Corp.
Northern Blvd., at 127 Street
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Capacities to 70 Tons
Booms to 140 ft. and 30 ft. jibs.
Special rates on long rentals
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1948 Heil 4500 gallon, one-compartment, single axle trailer, #K139, **$1375.**
1948 Fruehauf 4430 gallon, one compartment, single axle trailer, #K148, **$1375**
1949 Fruehauf 4545 gallon, one-compartment, single axle trailer, #K159, **$1500**
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1950 Trailmobile 4580 gallon, one-compartment, single axle trailer, #K174, **$1675.**
1950 Heil 4600 gallon, one-compartment, single axle trailer, #K178, **$1675.**
1946 Butler 5800 gallon, 3-compartment, tandem axle, #M-233, **$2300.**
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1948 Penn Furnace 4420 gallon, one-compartment, single axle, #K149, **$1375.**
1950 Heil 4610 gallon, one-compartment, single axle, #K181, **$1675.**
1947 Butler 5200 gallons, 2-compartment, tandem axle, #M226, **2300.**
1953 Butler 4150 gallon, Asphalt one-compartment, #K101, K102, **$4500 each.**
1948 Heil 4500 gallon, one-compartment, single axle, fuel oil transport #139, **$1375.**

Choice of many others.

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Phone: BEnton 7400

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Used 13 yd. bottom dumps
Cummins & General Motors Powered
Located - Texas - Pa. - N. Y. State
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Northwest 41 Pullshovel or Dragline, Cat Diesel—Serial #6639
Lima 34 Pullshovel, Cat Diesel 1950 Model

CYRIL J. BURKE INCORPORATED
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TWinbrook 2-1420

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STORAGE BATTERY
LOCOMOTIVES

1½ to 10 Ton — 18" to 56" Track Gauge
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Greensburg, Pennsylvania

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Universal Type
3000 pcs. Mfd. by Universal Form Clamp Co.—Slightly Used

2 x 8'	2 x 4'	1½ x 4'
2 x 6'	2 x 3'	1 x 6'

BOILERS
80 H.P. and 1½ H.P.

CENTRIFUGAL PUMP
Capacity 25 M.G. per day
30" svc. 24" dis.

MACHINERY & STEEL DIVISION
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Phone: Gilmor 5600—5601

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6' x 22" Hardinge Conical Ball Mill.
Rotary Steam Tube Dryer—4' x 30', 6' x 40'
Rotary Hot Air Dryer—3' x 24', 4'6" x 40', 5' x 30'
8" x 10" Sturtevant Jaw Crusher
Hoists, Cranes, Conveyors

We pay for your surplus; send us your listing

PERRY EQUIPMENT CORP.
1410 N. 6th St. St. 4-7210
Phila. 22, Pa.

Unit Model 1020A
TRENCHOE

1955, powered by a General Motors diesel Model 451 engine with torque converter. Serial No. 55542. Engine No. 4C-3673. Used one month. Price: $19,000.00.

The Jaeger-Lembo Machine Corp.
Northern Blvd., at 127 Street
Flushing 52, N. Y., Hickory 6-8800

FOR SALE
HEAVY DUTY CABLEWAYS, NEW

Twin heavy duty, general purpose Cableways, each designed to handle a normal hook load of 22,000 lb. (9.8 tons) at speeds specified hereunder:—

Speeds			Spans	
Hoisting	—	300 ft. per minute	Higher Cableway	—1,755 ft.
Lowering	—	200 ft. per minute	Lower	—1,630 ft.
Carriage Travelling	—	1,200 ft. per minute		
Tower Traversing	—	50 ft. per minute		

At 930 ft. from the Head Tower, with a lowering distance of 250 ft., each Cableway should be capable of placing 50 cu. yd. of concrete per hour with a four cu. yd bucket.

Cableways are complete and include:—Fixed 100' Head Tower, two (2) 40'0" height, 30'0" gauge, Traversing Tail Towers, Machine House, Main Cable, Main Cable Take-up Tackle, Main Cable Take-up Winch, Carriage, Fall Block, Main Winches, Tail Tower Traversing Gear, Compressed Air System, Warning Signals, Lifting Appliances, Ward Leonard Electrical Controls, etc. —Specifications and further particulars may be obtained from the

STATE ELECTRICITY COMMISSION OF VICTORIA
22 William Street — MELBOURNE, AUSTRALIA

DON'T WAIT
WF-H BEAMS
PILE SECTIONS
NEW · USED · IN STOCK

8" B P	36#	19/35'
10" B P	42#	45/50'
12" B P	53#	60/65'
14" B P	73#	60/65'
14" B P	89#	60/65'

We are also interested in purchasing your surplus material.

We assure you our prices will be the best obtainable.

Unit Model 1020
¾ YD. CRAWLER TYPE SHOVEL

1955, powered by a General Motors diesel Model 451 engine with a torque converter. Serial No. 55230. Engine No. 4C-3339. Used 5 months. Price: $17,000.00.

The Jaeger-Lembo Machine Corp.
Northern Blvd., at 127 Street
Flushing 52, N. Y., Hickory 6-8800

FOR SALE
1005 KOEHRING DRAGLINE
Machine in excellent shape
Located in Montana

FS-9469, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

Call HY DRACHMAN
STEEL CORPORATION
14-23 34th Ave., Astoria, N. Y.
Phones: AStoria 8-4484 8-8023

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TRACK ACCESSORIES
NEW and RELAYING

FOR SALE or RENT—EASY TERMS
Rebuilt-A1 Condition

48B Bucyrus Erie Shovel 2 cy diesel
Northwest Model 6 Shovel, 1½ c.y.
Caterpillar Auto Patrol No. 12
Caterpillar D8 Bulldozer
Caterpillar Scraper Model 80
3-Caterpillar DW 10's

WILLIAMS CONSTRUCTION COMPANY
Box 145 Balto. 20, Md. — Murdock 6-6600

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Surplus New & Used
FOR SALE

RAILS
FOR IMMEDIATE DELIVERY

500 Tons	80# ASCE	Relay
400 Tons	90# ARA-B	Relay
150 Tons	90# ASCE	Relay

TIE PLATES • Excellent Relay
TURNOUTS — LIGHT RAILS
TRACK ACCESSORIES

MORRISON
RAILWAY SUPPLY CORP.
814 Rand Bldg. — Buffalo 3, N. Y.
MOhawk 5820

4—LaPlante-Choate
MOTOR SCRAPERS
Model TS-300

These machines are in very excellent condition.

VILBRO EQUIPMENT CO.
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IMMEDIATE DELIVERY

APPROXIMATELY 4000 L.F. 14" O.D. by .281 WALL, RANDOM & DOUBLE RANDOM LENGTHS. ASTM SPECIFICATION A-252 CURRENT, GRADE 2. ALSO 66—14" I.D. SLEEVES AND 27—16" SLEEVES. MATERIAL READY FOR LOADING ON YOUR TRUCKS OR FREIGHT CARS, F.O.B. BROOKLYN, N. Y.

FS-9470, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

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35-ton Plymouth Standard Gauge Four Wheel Locomotive, new 1939, powered by Cat. D17000 Diesel Engine, with air brakes. Can be demonstrated on short notice and priced to sell.

THE ACME EQUIPMENT COMPANY
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VErmont 7-0366

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All sizes and weights. Also frogs, switches, spikes, bolts, tie plates, contractors' and mine equipment carried in stock.

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Reno, Nevada — Carnegie, Pa.

FOR SALE

1—120B Bucyrus Erie shovel, electric, Ser. No. 51715. With 1-5CY and 1-6½CY dipper and 1000 LF electric cable. Available about May 1, 1956.

W. E. O'NEIL CONSTRUCTION CO.
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RAILROAD Cross and Switch TIES
Promptly from adequate stocks
NEW and USED *(as available)*

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72,000 sq ft asbestos felt insulation. ¾" thick 5 ft wide. Fire proof water repellent. Acq cost $32,000. Sell for $6,000.

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Meriden, Conn.

PIPE
VALVES and FITTINGS
all Sizes in Stock
NEW-USED
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NEW — RELAYING — TRACK ACCESSORIES
MIDWEST STEEL CORP.
502 DRYDEN STREET
CHARLESTON, W. VA
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Over 10,000 sq. ft. Bulldog Steel Forms for commercial and residential concrete walls. Good Condition. Reasonably priced for quick sale. Write

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NEW STRUCTURAL STEEL

ANGLES	I-BEAMS	CHANNELS
50 Ton 3" x 3" x 5/16"	100 Ton 3" @ 5.7#	50 Ton 4" @ 5.4#
20 Ton 3-1/2 x 3-1/2 x 1/4"	50 Ton 6" @ 12.5#	50 Ton 4" @ 7.25#
50 Ton 3-1/2 x 3-1/2 x 5/16"	50 Ton 6" @ 17.25#	50 Ton 8" @ 11.5#
20 Ton 3-1/2 x 3-1/2 x 3/8"	50 Ton 10" @ 25.4#	50 Ton 10" @ 15.3#
20 Ton 4" x 3" x 1/4"	50 Ton 12" @ 31.8#	50 Ton 10" @ 20#
20 Ton 4" x 3" x 5/16"	50 Ton 12" @ 35#	50 Ton 10" @ 25#
20 Ton 4" x 3" x 3/8"		50 Ton 12" @ 20.7#
20 Ton 4" x 3-1/2 x 1/4"		50 Ton 12" @ 25#
20 Ton 4" x 3-1/2 x 5/16"		50 Ton 12" @ 30#
20 Ton 4" x 3-1/2 x 3/8"		
20 Ton 5" x 3-1/2 x 1/4"		
20 Ton 5" x 3-1/2 x 5/16"		
20 Ton 5" x 3-1/2 x 3/8"		
20 Ton 6" x 3-1/2 x 5/16"		
20 Ton 6" x 3-1/2 x 3/8"		
20 Ton 6" x 4" x 3/8"		

All material listed is in 40, 45, and 60' lengths.

ALAN STEEL COMPANY, INC.
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CABLEWAYS
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ELECTRIC, STEAM or DIESEL
CAPACITY 3 TO 20 TONS
SELL, RENT or BUY

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FOR SPEED, ECONOMY, EFFICIENCY, FLOOD SAFETY

AMBURSEN DAM CO. INC.
295 MADISON AVE, NEW YORK — LARGE EXCLUSIVE

Lima 44 Crawler Crane 50' Boom

Have recent model Lima one yard (25 ton) crane in excellent condition now available, Metropolitan N. Y. Area. Will consider selling outright or long term rental with purchase option.

FS-9418, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

USED TRUCK MIXERS

High Discharge—Horizontal
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All Sizes—50 in Stock

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Northern Blvd., at 127 Street
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RENT STEEL SHEET **PILING**

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PIPE FOR PILING
LIGHT-WEIGHT STEEL PILING
PILE HAMMERS & EXTRACTORS

L.B. FOSTER CO.

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574 pcs. 35-34 ft.
723 pcs. 33-32 ft.
407 pcs. 31-30 ft.
Kentucky Shipping Point.
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MISSISSIPPI VALLEY EQUIPMENT CO.
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WESTERN SERVICES CORPORATION
representative of SIDELOR FRANCE
601 E. Linden Ave., Linden, N. J.
HUnter 6-4000
STOCK AVAILABLE IN LINDEN, N. J.

STEEL SHEET PILING IN U.S. & CANADA
3800 TONS BETH. SP4-20', 26', 30', 33', 38', & 40'
900 TONS BETH. DP2 & AP3, 10', 15', 40', & 60'
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300 PCS. 8 GA. CORRUGATED 10' to 20'
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60 E. 42nd ST., NEW YORK 17, N. Y.

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Pcs.	Section	Length	Location
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75	M-116	28 to 30'	Mississippi
150	M-116	33 to 36'	Iowa
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CONMACO — PHONE DRexel 1-3930
CONTRACTORS MACHINERY COMPANY
804 KANSAS AVE., KANSAS CITY, KANSAS

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Highway Prospects Brighten

PROSPECTS FOR APPROVAL BY CONGRESS of a major highway-building program have brightened considerably with the approval by the House Ways and Means Committee of the Boggs bill. This bill would raise $13.5 billion in 16 years through additional federal taxation of motor fuel, tires, trucks and buses. So, with the Public Works Committee agreed on the Fallon bill as setting forth the details of the program itself, the way is now cleared for floor debate on a measure that could assure a start on interstate system construction next year.

There still are objections to some features of the legislation now before Congress, but none of them appears so major as to raise doubt as to the ability of Congress to overcome them. For a most heartening aspect of the whole situation is the apparent willingness of those who object to some features of the bills to accept compromises in order to get a major highway bill passed.

The Administration has given its approval to the pay-as-you-go financing plan now proposed instead of the bond plan it put forward last year. The Administration has also accepted the 13-year spread for completion of work on the interstate system as against the 10-year period recommended last year.

The Administration, however, is not in favor of the provision of the Fallon bill that would give states credit for toll highways or free highways already built to standards set for the interstate system provided they follow routes approved for that system. Speaking for the Administration, Secretary of Commerce Sinclair Weeks said that if this is done, more than the current estimate of $27 billion will be needed to complete the interstate system. As many members of Congress are known to be opposed to this credit proposal of the Fallon bill, it may be a provision that will have to be dropped to insure passage of the bill.

Both Secretary Weeks and Rex M. Whitton, President of the American Association of State Highway Officials, objected to the section of the Fallon bill that would have the effect of freezing truck size and weight limits at those now in effect in each state or at the limits approved by the AASHO in 1946. Both men believe that size and weight limits are matters for state rather than federal control. Here, again, is a provision that may have to be dropped to insure passage of the bill.

There is still doubt in some quarters that trucks pay their proportionate share for use of the highways, but since Secretary Weeks declined to give the results of any Bureau of Public Roads studies on this point, there is no way to challenge the truckers' contention that they pay equitable taxes. These taxes per mile, say the truckers, average four times what a passenger car pays, a differential that is claimed to be fair. This, no doubt, is a subject which will be debated endlessly, but there is reason to hope that it will not be allowed to stymie the present proposals, since they increase the tax on the private motorist only about $7 a year.

In any event, there is a most encouraging atmosphere of compromise prevailing in the field of new highway legislation. This can be attributed to any one of a number of reasons, but it is basically a reflection of public demand for better roads. It is also a result of a realization that further procrastination will result in slowing all road building so that catching up will be even more expensive. With both Congress and its constituents convinced that the long-range highway program must be no longer delayed, legislation should follow with reasonable rapidity. Let the spirit of compromise prevail!

Designing for Ultimate Strength

IN VOTING FOR AN UPDATED VERSION of its Building Code Requirements for Reinforced Concrete at its annual meeting, the American Concrete Institute simultaneously approved use of the ultimate-strength method of design. While that theory has been permitted for some concrete components in the past, this is the first time that the ACI code has extended it to all.

The code revision (new Sect. 601b) is restricted to design of cross sections. Advantage is not taken of the readjustment in indeterminate structures of the relative magnitude of bending moments at various sections as ultimate load is approached. As stated in an appendix in the updated code, it is assumed that external moments and forces acting in a structure will continue to be determined by the theory of elastic frames.

In common with the elastic theory, ultimate strength design—also called limit-load or limit design—assumes that plane sections normal to the bending axis of a beam remain plane and that the tensile strength of concrete in flexure can be neglected. However, the new theory takes into account the fact that at ultimate strength, stresses and strains are not proportional, as assumed in the elastic theory.

Advantages of ultimate-strength design include possible savings in steel and concrete, ability to vary safety factors for dead and live loads, and elimination of inconsistencies in design of members subjected to bending and direct stress. Generally, also, design equations are simpler than those for the elastic theory.

Perhaps the biggest weakness in Sect. 601b—and in the older code—is the part relating to the requirements for shear, diagonal tension and bond. Studies are still under way to supply much needed data on these subjects. In the meantime, the code requirements related to them should be used with caution; they may be safely used under "average" conditions, but a conservative approach would be wise for out-of-the-ordinary structures.

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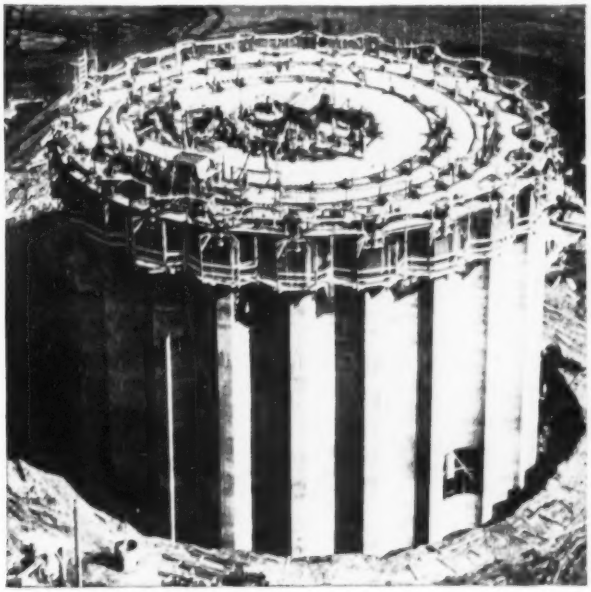

Left: View of the four tower cylinders under construction, with slip-form platform at top.

Right: Wire-winding machine wraps finished tank in pre-stressing operation.

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